2200 Energy Drive | Canonsburg, PA 15317
844-MVP-TALK | mail@mountainvalleypipeline.info
www.mountainvalleypipeline.info

July 21, 2021

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, DC 20426

RE: Mountain Valley Pipeline, LLC
Docket No. CP16-10-000
Response to Comments of Preserve Bent Mountain

Dear Secretary Bose:

Mountain Valley Pipeline, LLC (Mountain Valley) has received a copy of the comments filed on July 16, 2021 by Preserve Bent Mountain in the above-captioned docket. Mountain Valley submits this response to correct the record.

In the July 16, 2021 letter, Preserve Bent Mountain repeats its claims regarding the age of the pipe coating.[1] Such claims have already been exhaustively reviewed by FERC and found to be without merit. Specifically, in the Order Granting Requests for Extension of Time issued October 9, 2020, FERC reviewed "concern regarding the coating of exposed pipe along the right-of-way."[2] FERC noted that, "as required by the Pipeline and Hazardous Materials Safety Administration, the pipeline coating will need to be inspected before installation and backfilling can occur."[3] FERC concluded: "Based on Commission staff's review of the FBE (fusion bonded epoxy) chalking analysis submitted by Mountain Valley and all other pertinent materials, we find no basis for supplementing the 2017 final EIS to analyze potential toxicity associated with FBE coating or revisiting the discussion therein."[4] The referenced analysis is attached hereto as Attachment A. Also, that same day, FERC issued a second order that fully reviewed and addressed the coating concerns.[5] FERC concluded: "as Mountain Valley has stated previously, the coating thickness on its stored pipes is above the manufacturer's recommendation, and the coating on each pipe segment is inspected for damage and thickness before the pipe is installed in the trench."[6]

Mountain Valley strictly adheres to all applicable regulatory requirements with respect to inspection of pipe coating. As noted by FERC, Mountain Valley has coated the pipe above the

[1] *See* Preserve Bent Mountain Motion to Intervene, Docket No. CP16-10-000 (filed September 9, 2020) (raising identical concerns regarding the pipe coating).
[2] *Mountain Valley Pipeline, LLC*, 173 FERC ¶ 61,026 at P 29 (2020).
[3] *Id*. (citing 49 C.F.R. § 192.461(c) (2021)). The regulation specifically requires: "Each external protective coating must be inspected just prior to lowering the pipe into the ditch and backfilling, and any damage detrimental to effective corrosion control must be repaired."
[4] *Id*.
[5] *Mountain Valley Pipeline, LLC*, 173 FERC ¶ 61,027 at P 46 (2020).
[6] *Id*. (citing Mountain Valley July 30, 2019 Data Response).

manufacturer's recommendation and then undertakes an intensive inspection process of each and every pipe segment prior to installation. Such inspection process includes checking for dents and third party damage as well as testing the pipe coating and thickness. Such extensive process is designed to ensure pipeline and coating integrity prior to lowering the pipe. Mountain Valley continues to conduct periodic coating surveys to confirm the integrity of the protective coating. Data collected during the most recent survey on pipe of similar age and in a similar location as those identified in Preserve Bent Mountain's letter show the coating thickness of the surveyed pipes remain within the industry-accepted limits.

While Preserve Bent Mountain professes an interest in pipeline integrity here in their never-ending pursuit of construction delays, their past advocacy shows their willingness to compromise pipeline integrity in pursuit of that same goal. In January 2020, following the Commission's October 2019 cessation order, Mountain Valley requested approval to install temporary cathodic protection on installed pipe segments to protect the pipeline from potential corrosion due to Project construction delays. Preserve Bent Mountain, along with other Project opponents, challenged this request even though it was solely for safety and integrity purposes.[7] The Commission did not act on Mountain Valley's request. The Commission allowed Mountain Valley to resume construction activities, including installing temporary anodes, in October 2020. Since that time, Mountain Valley has installed temporary anodes at over 230 locations, and is on schedule to complete the remaining accessible temporary anodes for all installed pipe segments by the end of this fall. Preserve Bent Mountain's true goal is obstruction, not safety or pipeline integrity or environmental protection.

Mountain Valley appreciates the opportunity to submit this information to clarify the issues raised by Preserve Bent Mountain. Should you have any further questions please do not hesitate to contact me.

Respectfully submitted,
MOUNTAIN VALLEY PIPELINE, LLC
by and through its operator,
EQM Gathering Opco, LLC

By: 

Matthew Eggerding
Assistant General Counsel

Attachment

[7] *See* Response to Mountain Valley Pipeline, LLC's Supplemental Request to Perform Additional Activities, Docket No. CP16-10-000 (filed January 27, 2020); Response to Mountain Valley Pipeline, LLC's January 29, 2020 Letter, Docket No. CP16-10-000 (filed February 10, 2020).

Attachment A

Mountain Valley July 30, 2019 Data Response Regarding Pipe Coating

625 Liberty Avenue, Suite 2000 | Pittsburgh, PA 15222
844-MVP-TALK | mail@mountainvalleypipeline.info
www.mountainvalleypipeline.info

July 30, 2019

Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street NE
Washington, DC 20426

Re: Mountain Valley Pipeline, LLC
Docket No. CP16-10-000
Response to Data Request

Dear Ms. Bose:

On October 13, 2017, the Federal Energy Regulatory Commission issued an order granting a Certificate of Public Convenience and Necessity to Mountain Valley Pipeline, LLC.

On July 10, 2019, the Office of Energy Projects issued a data request with respect to epoxy coatings. In this filing, Mountain Valley submits a response to the request as well as a verification from the respondent.

If you have any questions, please do not hesitate to contact me at (412) 553-5786 or meggerding@equitransmidstream.com. Thank you.

Respectfully submitted,

MOUNTAIN VALLEY PIPELINE, LLC
by and through its operator,
EQM Gathering Opco, LLC

By:

Matthew Eggerding
Assistant General Counsel

Attachments

Cc: James Martin, FERC
Paul Friedman, FERC
Lavinia DiSanto, Cardno, Inc.
Doug Mooneyhan, Cardno, Inc
Service List

Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000

Response to Information Request Issued July 10, 2019

Request:

Please provide toxicological environmental and health information for Fusion Bonded Epoxy (FBE) coatings (3M™ ScotchkoteTM Fusion Bonded Epoxy Coatings and 3M™ ScotchkoteTM Liquid Epoxy Coatings, or their equivalents) used for coating the project's pipeline and associated utilities. Evaluate and report on the toxicity of the FBE from all potential exposure pathways including from direct and indirect human contact, ingestion or inhalation; as well as environmental pathways (leachability and mobility) in air, soils, surface water, and groundwater. The evaluation should likewise include an analysis of human and environmental exposure from the degradation of FBE due to exposure to sunlight, and sloughing (chalking) of the material.

Response:

Fusion bonded epoxy (FBE) and other epoxy coatings have been in use since at least the 1960s in various applications. This class of products has been studied extensively. To Mountain Valley's knowledge, there is no evidence that the use of epoxy coatings present a risk to human health, aquatic life, or other environmental receptors through any foreseeable exposure pathway.

I. Pipeline Coatings are Required to Prevent Corrosion

Coatings serve a necessary role in protecting the pipeline from corrosion. The U.S. Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA) has promulgated regulations prescribing "minimum requirements for the protection of metallic pipelines from external, internal, and atmospheric corrosion." 49 C.F.R. § 192.451. Two methods of corrosion protection are mandated: (1) external protective coating and (2) cathodic protection system. 49 C.F.R. § 192.455(a). Coatings adhere to the pipeline and provide the first line of defense against corrosion. Cathodic protection applies a small electrical current onto a pipeline which provides supplemental protection against corrosion. An advantage of epoxy coatings over certain other coating types is that they do not electrically shield the cathodic protection system even if the coating fails.[1] The PHMSA regulations also require that the coating must be inspected and, if necessary, repaired prior to lowering the pipeline into the trench and the entire corrosion-protection system must be monitored on an annual basis. 49 C.F.R. §§ 192.461(c), 192.465.

Mountain Valley's Final Environmental Impact Statement (FEIS) outlines the steps Mountain Valley will take to ensure that the coating on its pipeline is adequately maintained during installation. A protective coating of FBE or approved coating is applied prior to the delivery of the pipe joints to the Project right-of-way. The primary coating used for the Mountain Valley Pipeline Project is 3M Scotchkote FBE 6233, which accounts for approximately 95% of coated pipe surface area of the Mountain Valley Pipeline Project. Sections of the coating that are

[1] U.S. Government Accountability Office, Pipeline Safety: Additional Actions Could Improve Federal Use of Data on Pipeline Materials and Corrosion 20 (GAO-17-6399) (Aug. 2017).

disturbed during the pipe bending and welding process are recoated by a coating crew. Prior to installation of the pipe, the pre- and field-applied coating are inspected visually for scratches and other defects and inspected electrically for pin holes and voids. Any damage to the coating must be repaired before the pipe may be lowered into the trench. FEIS 2-40.

II. Evaluation of Human Health and Environmental Risk from Use of Epoxy Coatings

Epoxy coatings have been in use for over 50 years and have been the subject of numerous scientific studies. To respond to this information request, Mountain Valley has evaluated and provided available published studies, representations from the coating manufacturers, and other relevant sources of information.

A. Epoxy Coating Use in Other Applications

Epoxy coatings are in widespread use in numerous applications that bring them into contact with people and the environment. Epoxy coatings are typically used to protect steel pipes, fittings, and related products from corrosion caused by the environment. In addition to pipelines, epoxy coatings, and in particular FBE coatings, are used to protect steel rebar in construction, submerged structures in aquatic environments (e.g., steel pier pilings), ships, and drinking water and wastewater infrastructure (e.g., interior and exterior of drinking water mains and valves).

The accepted use of epoxy coatings in drinking water infrastructure is particularly relevant to this information request. Most states, including Virginia and West Virginia, require that pipes and other equipment that come into contact with drinking water in the water treatment and distribution systems must conform to the NSF/ANSI 61: Drinking Water System Components – Health Effects standard. According to NSF International,

> NSF/ANSI 61 is a performance-based standard that evaluates the amount of contaminants that leach from the products into drinking water, rather than setting prescriptive limits on content. This differs from U.S. Food and Drug Administration requirements and some international standards that are based only on prescriptive content requirements.
>
> NSF/ANSI 61 requires analysis for any chemicals that leach from a material into drinking water and a toxicological evaluation of concentrations leached to ensure that they are below levels that may cause potential adverse human health effects. The toxicological evaluation criteria are based on lifetime exposure to the concentration of contaminants in drinking water.[2]

Epoxy coatings have undergone the NSF/ANSI 61 toxicological review process and been certified for use in applications that bring them into contact with drinking water—including lining the interior of water mains and distribution pipes.

[2] NSF/ANSI 61: Drinking Water System Components – Health Effects Standard Overview, https://www.nsf.org/newsroom_pdf/overview_nsf_ansi_61.pdf.

As noted above, the primary coating for the pipeline is 3M Scotchkote 6233. Another product sold by the same manufacturer—3M Scotchkote 6233W—has received NSF/ANSI 61 certification.[3] As stated in the letter included in Attachment A, the manufacturer confirmed that these two coatings have the *same formulation*.[4] Thus, an identical FBE coating to that used on approximately 95% of the pipeline has undergone a toxicological review process deemed adequate by the relevant authorities in Virginia and West Virginia for use on the interior of drinking water lines. This provides important evidence that FBE coatings in general (which share similar chemical compositions) and the primary coating used by Mountain Valley in particular (i.e., 3M Scotchkote 6233) do not present a risk to human health, including when the pipe coating is exposed to groundwater that may serve as a source of drinking water.

B. Chemical Constituents of Epoxy Coatings

Mountain Valley is aware that members of the public have expressed concern that certain alleged ingredients or degradation byproducts of the epoxy coatings used by Mountain Valley may present a toxicity hazard. This is an overly simplistic and unscientific basis upon which to base conclusions about potential human health or environmental risks. The simplified formula for determining risk is hazard plus exposure. That is, the use of a product does not pose an actual risk unless it contains a human health or environmental hazard and there is a likelihood that persons or environmental receptors will be exposed to that hazard at levels sufficient to cause harm. Risk assessment principles allow the reasonable and scientific differentiation between those hazards that should be avoided or minimized and those that are not cause for concern. The potential hazards of the epoxy coatings used by Mountain Valley identified by commenters fall into the latter category.

1. Effect of Fusion-Bonding Process on Chemical Constituents

Mountain Valley possesses safety data sheets (SDSs) for each of the FBE coatings used on the Project. It is important to understand that the chemical ingredients listed in the SDSs are for the coatings in their *uncured powder form*. That form is not indicative of the chemical constituents and properties of the coating when it is applied to the pipe.

Upon application to the pipe, the FBE coating in its powder form will be heated, which causes the resin and hardener components to react. The resin will undergo chemical cross-linking, which creates a strong polymer network with negligible solubility. According to the manufacturer of most of the coatings used by Mountain Valley, 3M, any minor quantities of constituents that remained unreacted would be physically entrained in the cured coating with limited ability to leach into the environment.[5] Thus, the chemical ingredients identified in the manufacturers' safety data sheets for the pre-applied coatings used on the Project are *not*

[3] A listing of products with NSF/ANSI 61 certification can be found at http://info.nsf.org/Certified/PwsComponents/Listings.asp?.
[4] Letter from 3M to William Limpert (Apr. 1, 2019), included herein as Attachment A.
[5] Refer to the Material Declaration on 3M EMD Products Sold in the USA (Oct. 23, 2018) ("3M Product Declaration"), which is included as Attachment B.

reflective of the substances that are actually present at the Project site. The manufacturer has further stated:

> The information provided on the Safety Data Sheet is based on the product's hazards before it is reacted and cured on the pipe. The warnings are based on the presence of substances at very low amounts in the powder prior to application and cure. These substances are expected to be encapsulated in the polymer matrix when the coating is applied and fully cured onto the pipe and would be dispersed throughout the coating and not migrate onto the surface or leach out of the coating. These substances are used in many consumer products and/or occur naturally as impurities from naturally-occurring minerals.[6]

The fusion-bonding process is completed prior to the pipes' arrival at the Project site. Unreacted FBE coating will be used only for field application to welds and repairs. This means that there is a minimal potential for unreacted FBE coating constituents to be released to the environment from the pipeline.

2. Presence of Organic Solvents in FBE and Other Epoxy Coatings

Mountain Valley is aware of several public commenters who have alleged that the FBE coatings used on the Project—3M Scotchkote 6233 in particular—may leach high concentrations of organic solvents, including methyl isobutyl ketone, and ortho-, meta- and para-xylene, into groundwater. The commenters rely on a study from 2015 (M. Francis, *Fate and Decomposition of Pipe Coating Materials in Abandoned Pipelines* (July 3, 2015)), which in turn cites leaching data from a 1989 American Water Works Association study (K. Alben et al., *Leachate from Organic Coating Materials Used in Potable Water Distribution Systems* (Jan. 1989)). The 1989 study reviewed the potential for solvents to leach out of *solvent-based* epoxy coatings that are sprayed onto the pipe surface in liquid form. In contrast, FBE coatings are applied in powder form and cured by heat, which means that solvents are not involved in the coating process. According to the 3M Scotchkote Product Information included as Attachment C, "Scotchkote FBE Powder Coatings are finely ground powders that react when heated. *They do not contain solvents*." Accordingly, there is no justification for any assertion that the FBE coatings are a source of organic solvents to the environment.

As detailed in the descriptions of the specific coatings below, approximately 99.8% of the total pipeline length will be covered by pre-applied FBE coatings (98.3%) or field-applied liquid epoxy coatings that contain no organic solvents (1.5%). In total, Mountain Valley estimates only approximately 0.2%—or approximately a total of 3,500 feet dispersed throughout the 303-mile pipeline—will be coated with specialty coating products containing organic solvents. There is no basis to assert that this limited use of epoxy coatings containing organic solvents presents any human health or environmental risk. The 1989 Alben study found the rate of organic solvent leaching was highest immediately after the coating is applied and rapidly decreases over a matter of days. Proper curing of the coating was found to limit the rate at which leaching may occur.

[6] Letter from 3M to William Limpert (Apr. 1, 2019), included as Attachment A.

For the Project, Mountain Valley has followed the manufacturers' recommendations for proper curing time, which limits any potential for leaching. Furthermore, the *highest* concentration of leached organic solvents documented in the 1989 study (coating samples immersed in water shortly after application) nevertheless remained *below* the applicable U.S. Environmental Protection Agency drinking water standards. In short, the allegation that the epoxy coatings used on the Project are a source of harmful organic solvent contamination to surface water and groundwater is baseless.

3. Coatings Used on the Project

Mountain Valley uses various specialty coatings for the Project. The coatings are referenced below with a brief description of the chemical ingredients in their *unreacted* form. Copies of the respective Safety Data Sheets (SDS) are included in Attachment D. As discussed above, the ingredients listed in the SDS are likely to be present in the cured form of the coating only in minimal quantities (if at all) and physically entrained in the coating.

a. Pre-Applied (or Mill-Applied) Coatings

3M Scotchkote 6233. This is the primary coating used for the pipeline. As noted above, Mountain Valley estimates approximately 95% of the total pipeline area will be coated with this product. This FBE coating is applied to the pipe sections prior to their arrival at the Project site. The attached SDS lists the constituent ingredients present in the product's *unreacted* form.

A public commenter has alleged that an unreacted form of this coating contains two potential carcinogens: quartz silica and titanium dioxide. The first substance, quartz silica, is a common mineral and the primary constituent of sand. The second substance, titanium dioxide, is a common pigment used in most paints and cosmetics that is approved by the U.S. Food and Drug Administration (FDA) as a safe additive to foods for human consumption. 20 C.F.R. § 73.575. These substances are identified as carcinogens based on chronic inhalation of the particles over long periods of time, typically occupational exposures associated with the manufacture of products using these materials. Because the pipe coating arrives at the site in its cured form bonded to the pipe, there is no reasonable potential for inhalation of these materials—and no potential for inhalation exposure when the pipe segments are buried.

The same public commenter has alleged that this coating contains a purported reproductive toxin, 4-4'-isopropylidenediphenol, based on their review of the SDS. This substance, however, has been approved for use in food packaging by the FDA. 20 C.F.R. § 177.1580. Moreover, the substance is present in a concentration less than 1% of the total coating by weight and is bound in the coating through the fusion-bonding process. Should any of the substance leach from the coating or be formed as a degradation product, it has low mobility in soil and readily biodegrades under most environmental conditions.[7] Thus, the likelihood of human exposure to this substance

[7] National Institutes of Health, Bisphenol A, https://pubchem.ncbi.nlm.nih.gov/compound/Bisphenol_A#section=ICSC-Environmental-Data.

through a drinking water pathway appears to be minimal and certainly no more than the likelihood of exposure of this same coating in use to protect drinking water pipelines (see above).

3M Scotchkote 6352. This FBE coating is applied with Scotchkote 6233 as part of a dual-layer pipe coating system to provide an Abrasive Resistant Overcoat (ARO). The Scotchkote 6233 / 6352 system is used in very rocky soils, open cut streams and road crossings, conventional bore applications, and other specialty bore locations. Mountain Valley estimates approximately 2% of the total pipeline length will have this dual-layer coating system.

The ingredients of 3M Scotchkote 6352 in its *unreacted* form are listed in the attached SDS. The potential for exposure to constituents of this coating is effectively the same as for 3M Scotchkote 6233. The only ingredient not also present in 6233 is feldspars, which refers to a class of common rock-forming minerals that make up over 50% of the Earth's crust.

Powercrete DD. Similar to 3M Scotchkote 6352, this liquid coating is applied with Scotchkote 6233 as part of a dual-layer ARO system. This solvent-free coating is reacted from two components: Powercrete DD Part A (resin) and Powercrete DD Part B (hardener). The attached SDSs list the ingredients for each part.

According to the manufacturer, this coating polymerizes to 100% solids when the Part A and Part B components are mixed and reacted. This coating is applied to pipe sections prior to their delivery to the Project site, so the raw ingredients are not expected to be present onsite. Any unreacted constituents are expected to be physically entrained in the coating and therefore present minimal potential for leaching. Mountain Valley estimates approximately 0.8% of the pipeline will be coated with Powercrete DD.

SPC SP-2888. SPC SP-2888 is a liquid coating that can be pre-applied or field-applied. It is a two-part product consisting of a base and a hardener. This product is 100% solids and solvent-free according to the manufacturer. The attached SDSs list the ingredients for each part. When applied at the shop, this coating will be completely polymerized by the time it has reached the Project site. Any unreacted constituents are expected to be physically entrained in the coating and therefore present minimal potential for leaching. Mountain Valley expects approximately 0.8% of the pipeline will be coated with pre-applied SPC SP-2888.

b. Field-Applied Coatings

The field-applied coatings are two-part epoxies that consist of a resin and a curing agent/hardener. When combined, the hardener reacts with the resin to trigger the rapid polymerization and curing process. As discussed above, this reaction ensures that the coating becomes non-soluble and adheres to the pipe. Any trace quantities of unreacted ingredients become physically entrained in the cured coating. The field coatings are applied in liquid form. The chemical reaction continues for a short time period (typically less than one hour but timing depends on atmospheric conditions) until the epoxy coating hardens into a solid.

The liquid two-part coating is either hand or spray applied. The coating is allowed to cure and the manufacturer-recommended test procedures are followed to verify coating is fully cured.

Mountain Valley expects to use four different field-applied epoxy coatings for the Project: (1) SPC SP-2888; (2) Denso Protal 7200; (3) Denso Protal 7125; and (4) Powercrete R-95. The SDSs for each of these coatings are included in Attachment D. Mountain Valley estimates that less than 2% of the total pipeline length will be covered by field-applied epoxy coatings.

SPC SP-2888. SPC SP-2888 is a SPC SP-2888 is a solvent-free product used to coat girth weld areas, bare pipe or fittings, or damaged areas in the pre-applied coating at or above 50 ℉ temperatures. Mountain Valley estimates this coating will be used for approximately 84% of all field-coating applications, totaling 1.46% of the total pipeline length.

Denso Protal 7200. Denso Protal 7200 is a solvent-free product used to coat girth weld areas, bare pipe or fittings, or damaged areas in the pre-applied coating at or above 50 ℉ temperatures. Mountain Valley estimates this coating will be used for approximately 4% of all field-coating applications, totaling 0.7% of the total pipeline length.

Denso Protal 7125 and Powercrete R-95. The only coatings used on the Project that contain organic solvents are Protal 7125 and Powercrete R-95. Protal 7125 is a specialty coating designed to be applied in cold weather conditions between -4 and 50 ℉. This product is designed to quickly cure in cold temperatures. Because construction is generally suspended during the winter, this coating has been used much less frequently than Denso Protal 7200 and SPC SP-2888. Mountain Valley estimates this coating represents approximately 8% of the field-coating applications, so approximately 0.1% of the pipeline may be coated with Protal 7125.

Powercrete R-95 is primarily used to coat the joints of pipe with the Scotchkote 6233/Powercrete coating system. The coating is the least commonly used coating on the Mountain Valley Pipeline Project. Mountain Valley estimates it accounts for approximately 3% of all field-coating applications, so less than 0.1% of the pipeline may be coated with this product.

C. FBE Coating Leaching Test Performed by Mountain Valley

Mountain Valley conducted leaching testing on samples of the primary coating used on the Project, 3M Scotchkote 6233, in July 2018. That coating is pre-applied to most pipe sections at the factory and accounts for approximately 95% of the overall coated length of the pipeline. The testing was conducted on samples removed from pipes that were stored outside at a pipe yard in West Virginia. These pipes had been exposed to the environment for several months at the time of sampling.

The removed coating samples were collected in three 32-ounce sample jars and sent to an accredited laboratory for testing. The laboratory tested the samples using the U.S. Environmental Protection Agency's Method 1311 Toxicity Characteristic Leaching Procedure. That test method involves exposing the sample to a highly acidic solution to rapidly leach constituents from the tested material. The resulting leachate is then analyzed for the presence and concentration of a list of potentially harmful substances.

No volatile or semivolatile organic compounds were detected in the pipe coating samples. Nor did the testing identify the presence of any other harmful substances. The only metal detected was a de minimis concentration of barium, which is a naturally occurring alkaline earth metal

commonly found in groundwater. The concentration of barium detected in the coating leachate, 0.111 mg/l, is approximately *20 times lower* than the U.S. Environmental Protection Agency's standard for drinking water. The testing results are included as Attachment E.

D. Potential for Inhalation Exposure to Sloughed Coating

Photodegradation of the polymer in the epoxy coating, which results in a chalky residue on the pipe surface, is well-known and well-studied phenomenon. Mountain Valley is not aware of any study that has identified an environmental or human health risk from this residue. In addition, as discussed in the section above, Mountain Valley's July 2018 testing of FBE coating that had been stored outside and exposed to the elements for several months did not identify the presence of any harmful substances.

In Mountain Valley's experience, the chalky residue is well-adhered to the pipe surface and does not become airborne in the wind. This is consistent with the industry's expected rate of photodegradation. Generally, only 1 mil (0.001 inch, or 0.025 millimeter) per year of a coating exposed to sunlight will degrade, which indicates that the total quantity of dust available to be released from exposed coated pipes and mobilized into the atmosphere by wind is extremely limited.

According to the 3M Product Declaration, photodegradation of the coating can form aldehydes, amides, various aromatics, and other byproducts. These byproducts are expected to cause no or minimal human health or environmental impacts because they would be created in extremely small quantities and may be subject to further photodegradation and biodegradation in soil and subsoil environments. Mountain Valley is not aware of any studies suggesting that any epoxy degradation products occur in a sufficient concentration to present any environmental or human health risk.

III. Integrity of Exposed Pipe Coating

Consistent with PHMSA requirements and standard industry practice, Mountain Valley employs measures to monitor and ensure that the integrity of its pipe coating is not compromised.

Mountain Valley conducted an evaluation of stored coated pipe segments in the summer of 2017. The photodegradation was measured on the Mountain Valley pipe and was determined to be equal to or less than the industry-expected rate. Mountain Valley had implemented protective measures that substantially decreased the coating degradation of pipes stored for long periods in construction yards. When pipe is stored stacked in construction yards, the photodegradation occurs on the outer pipe joints in the stack that are most exposed to sunlight. Mountain Valley took the proactive step of shuffling the pipe in the stacks to prevent the photodegradation from occurring at one location on the coated pipe surface. Mountain Valley will employ this measure as necessary until all pipe segments are installed.

In addition, in August 2018, Mountain Valley engaged the coating manufacturer in a discussion on the minimum coating thickness necessary to maintain the coating's integrity and sampled the average pipe coating thickness of its stored pipes. Mountain Valley determined that the coating thickness on its stored pipes remained above the manufacturers' recommendation. Mountain

Valley expects that all pipes will be installed in the trench well before the coating thickness drops below an acceptable level.

The pipe coating monitoring and protective measures discussed above are employed by Mountain Valley as part of a general coating integrity management strategy for its stock of pipes. Nevertheless, the coating on each individual pipe is inspected for damage and thickness before the pipe is installed in the trench. This testing is conducted by running a device called a "Holiday Detector" across the pipe. That device uses an electrical current to detect any defects in the coating. Any damaged coating or coating thin spots must be repaired prior to installation, or the pipe segment is not installed.

Respondent: Jeffrey Klinefelter
Position: Vice President, MVP Construction & Engineering
Date: July 30, 2019

Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000

Response to Information Request Issued July 10, 2019

ATTACHMENT A

LETTER FROM 3M

(APRIL 1, 2019)

3M Electrical Markets Division

3M Austin Center
6801 River Place Blvd.
Austin, TX 78726-9000

3M Science. Applied to Life.™

April 1, 2019

William Limpert
wflimpert@gmail.com

Dear Mr. Limpert:

This letter is in response to your request regarding 3M™ Scotchkote™ Fusion Bonded Epoxy 6233 and 6233W. Please note there is no difference between 6233 and 6233W. The W is a designation for potable water applications.

These products are composed predominantly of polymeric materials and inorganic compounds. If the products are applied as per 3M application guidelines and fully cured upon application, they are expected to resist degradation and have negligible water solubility under normal environmental conditions.

Chalking is a phenomenon that occurs when epoxy-based coatings are exposed to UV for an extended period of time. It is not unique to 3M products. The chalk is composed of polymer degradation products (not typically known with specificity) that are created by exposure of the surface of the pipe to UV light from the sun. Although we have not conducted studies to confirm their exact identity, the degradation products are generated in low quantities, have low water solubility, and are therefore not thought to enter the environment in amounts capable of producing an adverse human health effect. We are not aware of any evidence to suggest it is harmful to human health.

The information provided on the Safety Data Sheet is based on the product's hazards before it is reacted and cured on the pipe. The warnings are based on the presence of substances at very low amounts in the powder prior to application and cure. These substances are expected to be encapsulated in the polymer matrix when the coating is applied and fully cured onto the pipe and would be dispersed throughout the coating and not migrate onto the surface or leach out of the coating. These substances are used in many consumer products and/or occur naturally as impurities from naturally-occurring minerals.

We hope this information is helpful.

Best regards,

3M Electrical Markets Division Regulatory Affairs

Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000

Response to Information Request Issued July 10, 2019

ATTACHMENT B

3M PRODUCT DECLARATION

3M Electrical Markets Division

3M Austin Center
6801 River Place Blvd.
Austin, TX 78726-9000

October 23, 2018

Material Declaration on 3M EMD Products sold in the USA [1]

Dear Valued 3M Customer,

This letter is in response to your request regarding soil leaching and UV degradation of 3M™ Scotchkote™ Fusion Bonded Epoxy Coatings and 3M™ Scotchkote™ Liquid Epoxy Coatings. These products are for industrial use only and not for consumer use. The customer will need to verify the product suitability for the desired application.

These products are composed predominantly of polymeric materials and inorganic compounds. If the products are applied as per 3M application guidelines AND fully cured upon application, they are expected to resist degradation and have negligible water solubility under normal environmental conditions. Unreacted components are expected to remain physically entrained within the coating which may limit leaching of product components from the cured coating. As leaching studies have not been performed on these products, soil leachability from these products is unknown.

At the core, surface photolysis is the breaking up of a polymer by light of the proper frequency to make radicals. The radicals interact with atmospheric oxygen and/or limited water to form ever smaller fragments of the polymer and ultimately, small molecules. The reactions are only at the surface, maybe 1-3 mils deep. If the small fragments are removed, photo-degradation keeps going and the pitting gets deeper, which is why the 3M technical guidance recommends not to remove the chalking.

In the case of chalking, the resulting molecules will be aldehydes (which react with water to make carboxylic acids), amides (which further degrade into amines and carboxylic acids), various aromatics similar in structure to either xylene, substituted phenols, bisphenol A, aniline, methylated anilines and water. Overall, the process is similar to but faster and with fewer degradation products than what is anticipated to happen when compared to biodegradation. (Biodegradation would make the same materials plus a number of others.)

None of the photo-degradation products are anticipated to bio-concentrate although a few will be toxic to aquatic species. The vast majority of the photo-degradation products will be persistent to readily degradable although there will be some larger fragments which could be very persistent. If the top of the pipe is covered with chalking and is buried shallow, the microbes will take care of the photo-degradation products. If the pipe is buried deep, the anaerobes will take care of the hydrocarbon portions although some low molecular weight acids and di-acids will be free to travel throughout the matrix in which the pipe is buried. The low molecular weight acids and diacids are not toxic and would be readily degradable if they weren't buried so deep.

Overall, the environmental impact is minimal.

Please contact your 3M representative for additional information.
Declaration electronically signed:

Andrew Morabu

Product Responsibility Liaison
3M Electrical Markets Division

---

[1] The information in this declaration represents 3M's knowledge and belief as of the date of this declaration, which may be based in whole or in part on information provided by suppliers to 3M.

If the information in this declaration is proven to be inaccurate as to specific Products, 3M will honor its standard warranty for those Products. 3M is not liable under any circumstances for indirect, incidental, special, or consequential damages (including but not limited to loss of profits, revenue, or business) related to or arising out of this declaration.

Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000

Response to Information Request Issued July 10, 2019

ATTACHMENT C

3M SCOTCHKOTE
PRODUCT INFORMATION

3M™ Scotchkote™
Infrastructure Protection Products

Protection You Can Count On

3M™ Scotchkote™ 50 years of protection

Meeting your coating needs
for more than 50 years.

3M

Header piping for a water purification plant illustrates the types of complex shapes that can be coated with 3M™ Scotchkote™ Coatings.

Application of 3M™ Scotchkote™ Epoxy Coating on rebar.

3M™ Scotchkote™ FBE Coating covers all surfaces if this valve assembly.

Stacked pipe with 3M™ Scotchkote™ Coating ready for installation.

Proven Performance for Corrosion Protection

3M, a leader in functional epoxy coating technology, offers a complete line of 3M™ Scotchkote™ Powder Coatings engineered for optimum corrosion protection of metal in the harshest environments, including saltwater, wastewater, petrochemicals, solvents and corrosive gases. Several of these coatings also help provide enhanced properties for operation at elevated temperature, mechanical damage protection, compression, wear, abrasion, and cavitation resistance. Scotchkote heat-cured fusion bonded epoxy coatings are 100 percent solids; thermosetting materials that achieve a high bond to metal surfaces as a result of a heat generated chemical reaction. They can be applied by fluidized bed, flocking (air spray), or electrostatic spray and are available through a worldwide network of applicators. 3M also provides several Scotchkote high-build liquid epoxy coatings for field application as primary corrosion protection coatings or as easy field repair materials for Scotchkote Fusion Bonded Epoxy (FBE) coatings. Surface primers are available to enhance chemical resistance and raise temperature operating range.

Scotchkote Fusion Bonded Epoxy Coatings

Feature	Benefit
Resistant to Cathodic Disbondment	Long term performance under a range of service conditions and temperatures.
Excellent chemical resistance	Long term performance in a variety of soil conditions.
Abrasion, gouge and impact resistant	Added protection for bores, river crossings, rough handling and applications requiring mechanical damage resistance.
High adhesion to metal	Resistant to soil stress.
Thermosetting	Resistant to penetration and will not cold flow under pressure. Does not soften at elevated temperature.
Balanced gel and flow characteristics	Enhanced coating continuity and application on metal.
Sag Resistant	Excellent coverage on sharp edges.
Machinable	Can meet close tolerances.
Lightweight	Lower shipping costs.
Compatible with other coating systems	Can be overcoated with other materials for UV protection. Provides an excellent base coat for multilayer pipe coating systems.
Plant Applied	Controlled application conditions.
NSF and AWWA Standard C213 Approved (Several specific products only)	Good for potable water applications.
Established network of applicators	Widely available for pipeline (external and internal), reinforcing steel and custom coating applications.

How to Specify 3M™ Scotchkote™ Coatings

It is possible for applicators to apply powder coatings by various methods. Please consult your 3M Infrastructure Protection Division Sales Representative or customer service representative for the names and capabilities of local applicators. Key application steps to consider when writing specifications are as follows:

- Remove oil and grease
- Abrasive blast to near white metal
- Remove blast media dust
- Inspect for surface imperfections, such as weld spatter and smooth by grinding (does not apply to reinforcing steel)
- Acid or deionized water wash (optional) to remove residual inorganic contaminants.
- Preheat parts to suggested application temperature
- Apply Scotchkote coating to the specified thickness
- Electrically inspect for continuity
- Repair as required

Pipe rehabilitation completed using 3M™ Scotchkote™ FBE Coating – and repaired with 3M™ Scotchkote™ Liquid Epoxy Coating.

Industry Standards and Specifications

Pipe (External)	
CSA Z245.20/06	Canadian Standards Association External Fusion Bond Epoxy Coating for Steel Pipe/External Polyethylene Coating for Pipe
NFA 49-711	French standard for steel tubes, three-layer external coating based on polypropylene by extrusion
NACE RP0394	National Association of Corrosion Engineers Standard Recommended Practice, Application, Performance, and Quality Control of Plant-Applied, Fusion bonded Epoxy External Pipe Coating
NAPCA Bulletin 12-78	National Association of Pipe Coating Applicators External Application Procedures for Plant Applied Fusion bonded Epoxy (FBE) To Steel Pipe
AWWA C213	American Water Works Association Standard for Fusion-Bonded Epoxy Coating For The Interior and Exterior of Steel Water Pipelines
ISO 21809-2&3	International Standard for Buried or Submerged Pipelines
Reinforcing Steel	
AASHTO M 284/M 284M	Standard Specification for Epoxy Coated Reinforcing Bars
AASHTO T 253	Standard Method of Test for Coated Dowel Bars
ASTM A 775/A 775M	American Society for Testing Materials Standard Specification For Epoxy-Coated Reinforcing Steel
ASTM A 884/A 884M	American Society For Testing Materials Standard Specification For Epoxy-Coated Steel Wire and Welded Wire Fabric for Reinforcing Steel
ASTM A 934/A 934M	American Standard Specification for Epoxy- Coated Prefabricated Steel Reinforcing Bars
ASTM D 3963/D	
D 3963M - 01	
NACE RP0395	National Association of Corrosion Engineers Standard Recommended Practice Epoxy-Coated Steel Reinforcing Bars
Piles	
STM A 950/A 950M	American Society For Testing Materials Standard Specification For Fusion bonded Epoxy-Coated Structural H-Piles and Sheet Piles
ASTM A 972//A 972M	American Society For Testing Materials Standard Specification For Fusion bonded Epoxy-Coated Pipe Piles
Pipes (Internal)	
NSF/ANSI	Standard 61, Drinking Water System Components, for use with potable water.
API 5RL2	American Petroleum Institute for Gas Pipe Internal Flow liners

*Specifications and Standards usually include the year in which they were last changed as part of the specification designator. These dates have not been included in the list.

Factory Applied Fusion Bonded and Liquid Epoxy Coatings

The Alliance Pipeline in Minnesota was coated with 3M™ Scotchkote™ Coating 6233.

Pipeline coated with 3M™ Scotchkote™ Fusion Bonded Epoxy Coating

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6233P

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6233P is a high performance fusion bonded epoxy powder coating which incorporates 3M's proprietary advanced adhesion promotion technologies. 3M's patented technology is an advanced formula designed for improved cathodic disbondment and adhesion during long term testing but also more consistency in final coating appearance. Meets CSA-Z245.20, NACE RP 0394 and ISO 21809-2&3

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6233

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6233 is a fusion bonded epoxy powder coating utilizing special adhesion promoting agents to enhance cathodic disbondment resistance. Scotchkote coating 6233 helps protect even under the stress of changing temperatures and soil compaction.

3M™ Scotchkote™ Fusion Bonded Epoxy Coatings 226N/226N+

3M™ Scotchkote™ Fusion Bonded Epoxy Coatings 226N/226N+ helps provide the same properties as the Scotchkote coating 6233 with improved damage resistance. They meet the requirements of CSA-Z245.20.

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6258

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6258 is a one part, heat curable, thermosetting coating designed to promote superior adhesion to steel and epoxy novolak resins that significantly raise the glass transition temperature of the coating. These benefits make this a suitable standalone coating and as a liner for downhole tubing.

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6171

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6171 is a one-part, heat curable, thermosetting, powdered epoxy coating designed for coating the interior of production tubing, internal gathering pipe, and fittings. When applied over a primer, Scotchkote coating 6171 FBEC meets Saudi Aramco seawater and sour gas service requirements.

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 626 Series

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 626 series offers solutions to address new challenges and needs for high-temperature pipeline coatings in the oil and gas industry. These Scotchkote coatings help protect oil and gas pipelines against corrosion while they operate at high temperatures. 3M™ Scotchkote™ Fusion Bonded Epoxy Coating 626-120 can operate up to 115° C as a standalone coating. 3M™ Scotchkote™ Fusion Bonded Epoxy Coating 626-140 can withstand temperatures up to 135° C as a standalone coating, and 3M™ Scotchkote™ Fusion Bonded Epoxy Coating 626-155 can withstand temperatures up to 150° as a standalone coating.

Fusion Bonded Epoxy Overcoating (Dual Layer Systems)

3M™ Scotchkote™ FBE Overcoatings possess select characteristics that impart unique properties for special applications and service conditions. They are compatible with all Scotchkote FBE corrosion protection coatings and are applied immediately after the primary coating in a continuous process. When properly applied, the result is a Dual Layer System that is chemically bonded at the layered interface. Most pipe coating applicators have the capability of providing these systems.

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6352

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6352 is an extremely hard, mechanically strong overcoating designed to help protect the primary corrosion coat from damage during pipeline directional drilling applications, bores, river crossing, and installation in rough terrain. Gouge and abrasion resistance properties have been maximized in the development of this dense coating material. Scotchkote coating 6352 also retains a high degree of flexibility that easily exceeds specification limits of steel for field bending. Scotchkote coating 6352 over a corrosion coating also helps provide enhanced performance in hot wet applications. Meets requirements of AWWA C213.

Gouge test simulates the stresses on a coating during a horizontal pipe pull. The coating sample is dragged under a weighted bit and the gouge depth is measured. Photo courtesy of Technical Inspection Services Inc.

3M™ Scotchkote™ Fusion Bonded Epoxy 207R

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 207R is a rough overcoating. Restricted flow and optimized components produce a granular finish on all Scotchkote pipe-coating products where increased surface roughness is required. Scotchkote overcoating 207R was specifically developed to help provide added traction for guide/feed wheels used in the installation of offshore pipelines. It reduces slippage between fusion bonded epoxy and a concrete overcoat and helps provide safer footing. Bendability exceeds requirements of ANSI B31.4 or B31.8 Codes.

Application of 3M™ Scotchkote™ Coating 207R to pipe.

Pipe coated with 3M™ Scotchkote™ Fusion Bonded Epoxy as the primary layer, polypropylene copolymer adhesive and polypropylene overcoating.

Multi-layer Polyolefin Coating Systems

Multilayer polyolefin systems consist of a base corrosion protection layer of fusion bonded epoxy, a polyethylene or polypropylene copolymer adhesive intermediate layer, and a topcoat of polyethylene or polypropylene. These combinations take advantage of the low moisture permeation and toughness characteristics of polyolefins and the low oxygen permeation and adhesion properties of fusion bonded epoxy. Selection of the proper base coating is critical because it is the foundation of the system and significant to its overall performance capability. During application, an adhesive layer is extruded onto 3M™ Scotchkote™ FBE Primer. A second extruder applies the topcoat to the specified thickness while the adhesive is still molten.

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 226N/226N+

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 226N/226N+ is a premier, high-performance epoxy coating powder base coating for three-layer polyolefin coating systems. Scotchkote coating 226N/226N+ employs special adhesion promoting agents that help improve cathodic disbondment performance in all service conditions, especially hot, wet environments. A range of gel and cure times are available for optimum bonding of the polyolefin adhesive layer. Scotchkote coating 226N/226N+ also offers superior protection as a stand alone coating.

Liquid Primers

Liquid primers are sometimes used with these coatings to enhance performance properties in particularly severe environments, such as those encountered in downhole oil production. Proper selection of internal coatings depends upon pipe size, type and service conditions. Contact your 3M sales or customer service representative for further information.

3M™ Scotchkote™ Liquid Phenolic Primer 345

3M™ Scotchkote™ Liquid Phenolic Primer 345 is designed specifically for application to metal surfaces prior to top coating with Scotchkote FBE coatings. When properly applied, Scotchkote primer 345 and topcoat systems help provide excellent resistance to CO2, H2S, CH4, petroleum distillates, and brine at elevated temperatures and pressures.

3M™ Scotchkote™ Water Based Primer 500N

3M™ Scotchkote™ Water Based Primer 500N is a water-based metal treatment designed to increase adhesion of fusion bonded epoxy coatings. Properly applied to blast-cleaned steel, it helps provide protection for metal surfaces and a uniform bonding base for increased coating performance. This primer significantly improves hot water resistance, autoclave resistance, and cathodic disbondment and salt spray resistance of the coating. It is easily applied with minimal application equipment and promotes a chemically uniform steel surface condition.

Pump volutes protected against corrosion with 3M™ Scotchkote™ FBE Coating 134.

Application of 3M™ Scotchkote™ FBE Coating 134 custom coating on a turbine.

Rebar coated with 3M™ Scotchkote™ FBE Coating 413 being used in a bridge project

Internal and Custom Coating

3M™ Scotchkote™ FBE Coatings are available with extended gel, flow and cure characteristics for application to the interior surfaces of pipe. In some cases, existing pipeline or custom coating products may have been adapted for internal use by modifying these properties. Scotchkote FBE coatings can be applied to a variety of parts for corrosion protection. Example applications include valves, pumps, tapping saddles, pipe appurtenances, manifolds, sewage aerators, tanks and pipe hangars.

3M™ Scotchkote™ Fusion Bonded Epoxy 134 (green)

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 134 (green) is designed for flock, fluid bed or electrostatic spray application. Because of the long gel time (up to 2.5 minutes at 350ºF/177ºC), Scotchkote coating 134 maximizes the time of application so that large surface areas or parts with complex recesses can be coated without overspray or laminations. Balanced formula and controlled viscosity allow high thickness build and edge coverage without sag or drips. This coating can also be applied cold electrostatically. Scotchkote coating 134 has been used extensively in the wastewater industry since 1965. Scotchkote coating 134 meets the requirements of AWWA Standard C213, for valves and appurtenances.

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 135

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 135 (gray) provides the same properties as the Scotchkote coating 134

Transportation & Construction Infrastructure Protection Coatings

Reinforcing Steel Coatings

3M has been a market leader for epoxy coated reinforcing steel since it first brought the innovation of epoxy coated rebar to the market in 1972. More reinforcing steel in roads, bridges, and other structures have been coated with 3M™ Scotchkote™ Fusion Bonded Epoxy Coatings than any other epoxy coating product. Our coating materials have been used in conjunction and as standalone corrosion protection systems to help protect rebar, dowel bar/dowel bar baskets, welded wire fabric/wire mesh, mechanical splicing, and spirals. 3M provides materials that exceed test requirements in accordance with industry standards and apply consistently in most types of coating plants and steel configurations.

3M™ Scotchkote™ Fusion Bonded Epoxy Rebar Coating 413

3M™ Scotchkote™ Fusion Bonded Epoxy Rebar Coating 413 is formulated to help provide superior flexibility for shop or field fabrication that exceeds current AASHTO and ASTM bend requirements. Scotchkote FBE rebar coating 413 is resistant to corrosive agents such as deicing salts, airborne salt spray, seawater, harsh chemicals, acid rain, carbonation, contaminated aggregate and concrete additives. Components have been carefully selected and balanced to maintain consistency and productivity control in all application plants. Cure is by residual heat. Scotchkote FBE rebar coating 413 meets all standards for coating of reinforcing steel prior to fabrication.

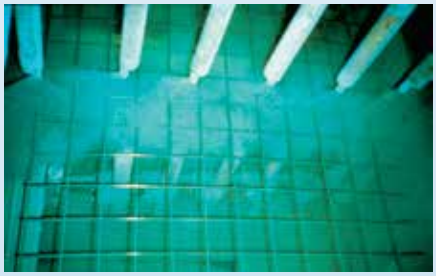
3M™ Scotchkote™ Fusion Bonded Epoxy Rebar Coating 413 Spray Grade

3M™ Scotchkote™ Fusion Bonded Epoxy Rebar Coating 413SG Spray Grade Coating is designed for application on welded wire fabric, mesh, chair assemblies, dowel baskets, cable-tensioning hardware, screw anchors and coupling devices. The coating possesses high flow capability without sag for maximum penetration into wire intersections and coverage on sharp weld cusps. Gel and cure time and have been extended to aid in this process, therefore the coating must be post baked. Scotchkote FBE rebar coating 413 spray grade meets all standards for coating of reinforcing steel prior to fabrication.

Rebar coated with 3M™ Scotchkote™ FBE 413

3M™ Scotchkote™ Fusion Bonded Epoxy Rebar Coating 413Y

3M™ Scotchkote™ Fusion Bonded Epoxy Rebar Coating 413Y is formulated to help provide superior flexibility for shop or field fabrication that exceeds current AASHTO and ASTM bend requirements. Scotchkote FBE rebar coating 413Y is resistant to corrosive agents such as deicing salts, airborne salt spray, seawater, harsh chemicals, acid rain, carbonation, contaminated aggregate and concrete additives. Components have been carefully selected and balanced to maintain consistency and productivity control in all application plants. Cure is by residual heat. Scotchkote FBE rebar coating 413Y meets all standards for coating of reinforcing steel prior to fabrication. When used in conjunction with arc sprayed zinc anode primers the coating exceeds the requirements of ASTM A 1055.



3M™ Scotchkote™ FBE 413 spray grade being applied to wire mesh

3M™ Scotchkote™ Fusion Bonded Epoxy Rebar Coating 426

3M™ Scotchkote™ Fusion Bonded Epoxy Rebar Coating 426 meets the rigid standards of ASTM A 934/934 M for coating of reinforcing steel in “after-fab” application. Like Scotchkote pipe-coating materials, Scotchkote FBE rebar coating 426 incorporates special adhesion promoting agents for enhanced corrosion protection and chemical resistance properties making it suitable for marine or harsh environments. These materials are specially formulated for use in a variety of straight bar and custom applications with prefabricated steel part configurations and accessories. Scotchkote FBE rebar coating 426 is available in two gel/cure times for application to straight or prefabricated rebar sections.

3M™ Scotchkote™ Fusion Bonded Epoxy Rebar Coating 426

Rebar Patch Compound

3M™ Scotchkote™ Liquid Epoxy 413/215 and 413/215 Cold Weather Grade Patch Compounds

3M™ Scotchkote™ Liquid Epoxy 413/215 and 413/215 Cold Weather Grade (CWG) Patch Compounds are two-part, ambient-temperature cure, thermosetting, liquid epoxy coatings. They are designed for the repair of damage to 3M™ Scotchkote™ Fusion Bonded Epoxy 413 Coatings. Scotchkote 413/215 patch compound can be applied by brush or spray. The coating has a long pot life (8 hrs at 70ºF/21ºC) and is easily applied in the plant or field. Scotchkote 413/215 patch compound (CWG) is applied primarily by brush and can be used at temperatures as low as 5ºF/-15ºC.

Coatings for Driven Piles

Driven piles are a total engineering solution. The design, installation and quality assurance that are part of each driven pile combine to eliminate guesswork and produce a known, reliable and cost-effective product that can accommodate a wide variety of subsurface conditions. Driven piles coated with 3M™ Scotchkote™ Fusion Bonded Epoxy Coatings are ideally suited for marine and other near-shore applications. This coating is very effective for not only pipe pile but also H and sheet pile components as well as for reinforcing steel. The coating system has proven to be very durable and potential damage to it from the handling, transportation or driving is relatively easy to repair and is normally localized at the point of damage with little or no additional pull off.

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6233P

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6233P is a high performance fusion bonded epoxy powder coating which incorporates 3M's proprietary advanced adhesion promotion technologies. 3M's patented technology is an advanced formula designed for improved cathodic disbondment and adhesion during long term testing but also more consistency in final coating appearance.

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6233

3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6233 is a fusion bonded epoxy powder coating utilizing special adhesion promoting agents to enhance cathodic disbondment resistance. Protects even under the stress of changing temperatures and soil compaction.

Pipe piling coated with 3M™ Scotchkote™ FBE 6233

Field-applied Liquids

Two-Part Liquid Coatings for Pipeline Rehabilitation, Girthwelds, and Pipeline Repair

Designed to complement 3M™ Scotchkote™ Fusion Bonded Epoxy Coatings, 3M™ Scotchkote™ Field Applied Coatings extend 3M's legacy of protection to the field.

3M™ Scotchkote™ Liquid Epoxy Coating 323

3M™ Scotchkote™ Liquid Epoxy Coating 323 is a 100% solids, two-part epoxy liquid coating designed to help protect pipelines and other metal surfaces from corrosion. Engineered to help provide excellent adhesion and chemical resistance.
Applied by brush, roller, cartridge, or plural component spray equipment. Excellent adhesion, easy to apply, and color matched to many 3M™ Scotchkote™ Fusion Bonded Epoxy Coatings.

3M™ Scotchkote™ Liquid Epoxy Coating 327

3M™ Scotchkote™ Liquid Epoxy Coating 327 is a 100% solids, two-part epoxy system designed to help protect steel pipe and other metal surfaces from the harsh affects of corrosion for temperatures down to 50°F/10°C. Cold weather doesn't mean you have to compromise on performance or easy application!

3M™ Scotchkote™ Abrasion Resistant Epoxy Coating 328

3M™ Scotchkote™ Abrasion Resistant Epoxy Coating 328 is a 100% solids, two-part epoxy system designed for directional drilling, rocky terrain, or other applications that require a rugged coating. Combining a traditional liquid epoxy with enhanced abrasion resistance, flexibility, and impact resistance, an AREC coating can be used in place of a conventional Abrasion Resistant Overcoat (ARO) or as a primary corrosion protection coating.

3M™ Scotchkote™ Liquid Urethane Coating 352

3M™ Scotchkote™ Liquid Urethane Coating 352 is a 100% solids, two-part urethane system designed to help protect buried steel structures from the harsh effects of corrosion. With a fast cure time and excellent flexibility, it is an excellent solution for applications that require fast turn-around and good chemical resistance. Can be applied in temperatures down to -5°C/14°F.

Cleaning pipe to a white finish for a rehab project.

3M™ Scotchkote™ Liquid Epoxy Coating 323 being applied to a pipe for a rehabilitation project.

Completed pipe coating rehabilitation using 3M™ Scotchkote™ Liquid Epoxy Coating.

3M™ Scotchkote™ Spray System HSS-450

3M™ Scotchkote™ Spray System HSS-450 is intended for use in a wide variety of spray applications using 3M™ Scotchkote™ Liquid Epoxy Coating 323 and 3M™ Scotchkote™ Liquid Epoxy Coating 327. It is designed for use where fast and easy setup, no clean up, minimal material waste and essentially no equipment maintenance are highly desirable.

Completed pipe coating rehabilitation using 3M™ Scotchkote™.

3M™ Scotchrap™ Corrosion Protection Tapes

Field Applied Patch Sticks

Hot Melt Patch Compounds

3M™ Scotchkote™ Hot Melt Patch Compound 226P is a heat-bondable polymeric repair material in stick form for plant or field touch up and repair of Scotchkote FBE coatings. It is designed for minor damage, small pinholes and nicks. Scotchkote Patch Compound 226P is easily applied and is quick setting for immediate installation and handling.

Field Applied Tapes

3M™ Scotchrap™ Corrosion Protection Tapes

3M™ Scotchrap™ Corrosion Protection Tapes are tough, polyvinyl chloride based tapes with special high tack adhesives formulated to resist corrosion of metal fittings, field joints, and electrical conduit systems. They are resistant to corrosive salt water, soil acids, alkalis and salts, common chemicals, chemical vapors and exposure to outdoor weathering and sunlight. They are also resistant to impact, abrasions, punctures, and tears.

3M™ Scotchrap™ Corrosion Protection Tape 50

3M™ Scotchrap™ Corrosion Protection Tape 50 is a highly conformable, all weather 0.254mm (10mil) thick tape designed for application over a wide temperature range.

3M™ Scotchrap™ Corrosion Protection Tape 51

3M™ Scotchrap™ Corrosion Protection Tape 51 provides similar qualities in a thicker, 0.508mm (20mil) tape.

3M™ Scotchrap Pipe Primer

3M™ Scotchrap™ Pipe Primer is a quick-dry, non-sag rubber based primer that permeates metal surface pits and irregularities, preparing the surface for tape application. Compatible with the special adhesives on Scotchrap tapes, it enhances adhesion.

Locators, Markers and Caution Tape

3M™ Dynatel™ Locators

3M™ Dynatel™ Locators combine simple interfaces, large backlit high-resolution graphics, excellent balance and ergonomics with precision locating capabilities to help you quickly and accurately identify underground assets. Dynatel locators can be used to trace pipe and cable paths, locate sheath faults, provide accurate pipe, cable or Sonde depth measurements, locate buried electronic markers, read/write to 3M iD Markers and interface with GPS instruments to create accurate maps of underground facilities. Dynatel locators are available in a range of configurations from fully-featured pipe, cable, fault and electronic marker locators to basic cable avoidance systems.

3M™ Electronic Markers

It takes just minutes to learn to use the 3M™ Electronic Marker System (EMS), and finding buried markers is just as easy. The locator transmits an RF signal to the buried marker. The marker reflects the signal back to the locator, and the location is indicated with both a visual meter reading and an audible tone.

3M offers several varieties of electronic marker and multipurpose locators to meet your needs, offering different types and ranges, and the markers are also available in two forms - Passive and iD. Both options are designed to help provide an accurate, convenient, long-lasting method of marking underground assets. Passive markers are designated by industry to mark points of interest. iD markers perform the same function, but can also be programmed to include customer-specific information such as facility data, type of application, material type and size, placement date and other important details.

3M™ EMS Caution Tape

3M™ Electronic Marking System Caution Tape uses a new 3M EMS marker technology embedded into a caution tape, for installation near or above the buried facility, helping provide continuous path location.

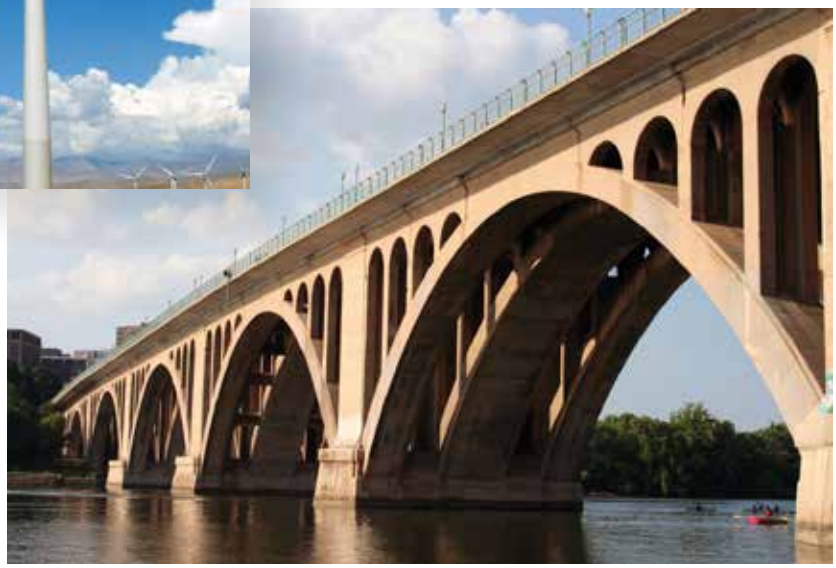
- Eliminates need to install tracer wire
- No access points or connections required
- Locate without the need of a transmitter
- Unique identification for each utility type
- Low installed costs
- Tape does not provide a path for lightning
- Signal path maintained even if the tape is cut or damaged
- Product design life - up to 50 years

3M™ Scotchkote™ Liquid Coatings and Repair Products for Maintenance and Corrosion Protection

3M™ Scotchkote™ Liquid Coatings are high performance protective coatings for the oil, gas, water, transportation, power, mining and construction industries. These coatings help provide long-term protection of buildings, structures and equipment operating in industrial and aggressive environments. In addition to protective coatings, the Scotchkote™ product line includes a wide range of engineering repair systems to maintain and extend the life of valuable structures and industrial machinery.

The product range includes:

- Corrosion Protection Systems
- Chemical Protection Systems
- Concrete Repair Systems
- Metal Repair Systems
- Ceramic Repair Systems
- Rubber Repair Systems
- Floor Repair/Resurfacing Systems



Products for Drinking Water*

3M™ Scotchkote™ Epoxy Coating 162PWX

3M™ Scotchkote™ Epoxy Coating 162PWX has been specifically developed to help provide corrosion resistance in potable water applications. This 100% solids lining can be spray applied on the internals of metal pipes, tanks, vessels and other equipment in contact with potable water. The ease of use combined with excellent corrosion and chemical resistance make this an extremely versatile product for infrastructure protection.

*Consult local regulation approval prior to use for drinking water.

Trenchless Pipe Rehabilitation Linings

3M™ Scotchkote™ Pipe Renewal Liner 2400 is a close fit, smooth liner that maximizes internal diameter to increase flow and efficiency while reinforcing pipes with existing cracks, pin holes and corrosion pitting. 3M trenchless lining products minimize the need to replace existing infrastructure affected by corrosion or tuberculation and can help to renew partially deteriorated pipe to help extend service life, minimize leaks, reduce outages, and reduce brown water issues. Scotchkote Liner 2400 is projected to meet material properties of ASTM F1216-09 after 50 years.

Products for Sea, Raw and Wastewater

3M™ Scotchkote™ Urethane Coating 165HB

3M™ Scotchkote™ Urethane Coating 165HB, is a two component 100% solids urethane coating system formulated to combine outstanding abrasion and impact resistance with a significant degree of flexibility. Used for diverse applications including internal and external protection of steel and concrete pipes, tanks, and vessels, bridges and related building and engineering structures and fabrications. Suitable for a variety of immersion conditions including sea, foul and raw water; also in chemically polluted, marine or underground environments.

3M™ Scotchkote™ Epoxy Coating 162HB

3M Scotchkote™ 162HB Epoxy Coating helps provide excellent corrosion resistance for both internal and external surfaces. This 100% solids lining can be used to coat pipes, tanks, vessels and other equipment in contact with sea water, raw water and wastewater.

3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 134W

3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 134W is a baked on epoxy coating that can be custom applied to help protect pipelines (external and internal) and a variety of components including valves, pumps, tapping saddles, pipe appurtenances, manifolds, sewage aerators, tanks, pipe hangers, ladders, hydrants, cast iron risers and flow meters from corrosion. Scotchkote FBE Coating 134W is designed for flock or electrostatic spray application. Because of its long gel time (up to 2.5 minutes at 350°F/177°C), 3M™ Scotchkote™ 134W maximizes the time of application so that large surface areas or parts with complex recesses can be coated without overspray or laminations. Meets requirements of NSF 61 for potable water.

Before

Our aging water infrastructure is subject to both corrosion and tuberculation build up caused by the interface of metal and water.

After

Internal pipe lined with 3M™ Scotchkote™ Pipe Renewal Liner 2400.

Handling & Safety Precautions
Read all Health Hazard, Precautionary, and First Aid statements found in theMaterial Safety Data Sheet, and/or product label prior to handling or use.

Ordering Information/Customer Service
For ordering technical or product information, or a copy of the Material Safety Data Sheet, call:
Phone: 800/722-6721
Fax: 877/601-1305
Data sheets and MSDS can be found on the website.

Shipping and Storage
Scotchkote FBE Powder Coatings are finely ground powders that react when heated. They do not contain solvents. Products are very shelf stable but may become unusable if exposed to temperatures above 80°F/27°C for extended periods of time. Handling precautions for individual Scotchkote coatings are described on product data sheets and materials safety data sheets.

Important Notice

All statements, technical information and recommendations related to 3M Products are based on information believed to be reliable, but the accuracy or completeness is not guaranteed. Before using the 3M Product, you must evaluate it and determine if it is suitable for your intended application. Because conditions of Product use are outside of our control and vary widely you assume all risks and liability associated with such use. Any Product-related statements not contained in current 3M publications, or any contrary statements contained in your purchase order, shall have no force or effect unless expressly agreed to in writing by an authorized officer of 3M.

Warranty; Limited Remedy; Limited Liability.
3M warrants that Product will conform to 3M published specifications upon shipment. If Product is proven not to have met the specifications your exclusive remedy and 3M's sole obligation will be, at 3M's option, to replace the Product or to refund the purchase price of the Product. **EXCEPT WHERE PROHIBITED BY LAW, THIS WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR THOSE ARISING FROM A COURSE OF DEALING, CUSTOM OR USAGE OF TRADE.** Buyer is an expert in its field and is responsible for determining if Products are suitable for a particular purpose or application. 3M has no obligation under this warranty with respect to any Product that has failed due to inadequate or improper storage, handling, surface preparation, application, or maintenance; failure to follow Product instructions; or alteration or damage to the Product caused by accident, neglect, or misuse. **EXCEPT WHERE PROHIBITED BY LAW, IN NO EVENT SHALL 3M BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGES (INCLUDING LOST PROFITS) ARISING FROM THIS PRODUCT, REGARDLESS OF THE LEGAL THEORY ASSERTED.**

Infrastructure Protection Division
6801 River Place Blvd.
Austin, TX 78726-9000
www.3M.com/corrosion

Please recycle. Printed in USA

80-6111-8637-2

Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000

Response to Information Request Issued July 10, 2019

ATTACHMENT D

PIPE COATING SAFETY DATA SHEETS

Safety Data Sheet

Document Group:	11-9658-3	**Version Number:**	29.00
Issue Date:	08/24/18	**Supercedes Date:**	07/25/18

SECTION 1: Identification

1.1. Product identifier
3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 6233 (4G, 8G and 11G)

Product Identification Numbers
80-6300-0068-7, 80-6300-0069-5, 80-6300-0070-3, 80-6300-0071-1, 80-6300-0143-8, 80-6300-0144-6, CE-1006-8912-0, CE-1006-8926-0, CE-1006-8928-6, CE-1006-8929-4, CE-1007-0004-2, CE-1007-0700-5, CE-1007-2579-1, CE-1007-4582-3 7010320113, 7100007254, 7100031090, 7010305826, 7100059688, 7100008979, 7000135973, 7000059813, 7000135101, 7000134685, 7000134370, 7000134369, 7000059807, 7000134364

1.2. Recommended use and restrictions on use

Recommended use
Coating, Corrosion Protection Coating for Metal

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Electrical Markets Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Combustible Dust.
Serious Eye Damage/Irritation: Category 2B.
Skin Sensitizer: Category 1.
Reproductive Toxicity: Category 2.
Carcinogenicity: Category 1A.

2.2. Label elements
Signal word
Danger

Symbols
Exclamation mark | Health Hazard |

Pictograms

Hazard Statements
May form combustible dust concentrations in air.

Causes eye irritation.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.
May cause cancer.

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Avoid breathing dust/fume/gas/mist/vapors/spray.
Wear protective gloves.
Wash thoroughly after handling.
Contaminated work clothing must not be allowed out of the workplace.

Response:
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of soap and water.
If skin irritation or rash occurs: Get medical advice/attention.
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.

Storage:
Store locked up.

Disposal:
Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

2% of the mixture consists of ingredients of unknown acute oral toxicity.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	25036-25-3	55 - 75 Trade Secret *
CALCIUM SILICATE	13983-17-0	20 - 40 Trade Secret *
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	25068-38-6	1 - 10 Trade Secret *

EPOXY RESIN - AMINE CONDENSATE	Trade Secret*	1 - 3 Trade Secret *
DICYANDIAMIDE	461-58-5	1 - 3 Trade Secret *
Titanium Dioxide	13463-67-7	0.1 - 1 Trade Secret *
4,4'-ISOPROPYLIDENEDIPHENOL	80-05-7	0.1 - 1 Trade Secret *
QUARTZ SILICA	14808-60-7	< 0.5 Trade Secret *

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Immediately wash with soap and water. Remove contaminated clothing and wash before reuse. If signs/symptoms develop, get medical attention.

Eye Contact:
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

5.2. Special hazards arising from the substance or mixture
Powdered material may form explosive dust-air mixture. Avoid fire fighting methods that would cause powders to become airborne.

Hazardous Decomposition or By-Products

Substance	Condition
Aldehydes	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Hydrogen Chloride	During Combustion
Ammonia	During Combustion
Oxides of Nitrogen	During Combustion
Oxides of Phosphorus	During Combustion

5.3. Special protective actions for fire-fighters

No special protective actions for fire-fighters are anticipated.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Eliminate all ignition sources if safe to do so. Ventilate the area with fresh air. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
Collect as much of the spilled material as possible. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Vacuum or sweep up. WARNING ! A motor could be an ignition source and cause flammable gases or vapors or dust in the spill area to burn or explode. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Dispose of collected material as soon as possible in accordance with applicable local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid breathing of vapors created during cure cycle. Avoid breathing of dust created by cutting, sanding, grinding or machining. For industrial or professional use only. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Use personal protective equipment (gloves, respirators, etc.) as required. Dust clouds of this material in sufficient concentration in combination with an ignition source may be explosive. Dust deposits should not be allowed to accumulate on surfaces because of the potential for secondary explosions. Routine housekeeping should be instituted to ensure that combustible dusts do not accumulate on surfaces. Solids can generate static electricity charges when transferred and in mixing operations sufficient to be an ignition source. Evaluate the need for precautions, such as grounding and bonding, low energy transfer of material (e.g. low speed, short distance), or inert atmospheres.

7.2. Conditions for safe storage including any incompatibilities
No special storage requirements.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits
If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
Titanium Dioxide	13463-67-7	ACGIH	TWA:10 mg/m3	A4: Not class. as human carcin
Titanium Dioxide	13463-67-7	OSHA	TWA(as total dust):15 mg/m3	
QUARTZ SILICA	14808-60-7	ACGIH	TWA(respirable fraction):0.025 mg/m3	A2: Suspected human carcin.
QUARTZ SILICA	14808-60-7	OSHA	TWA Table Z-1(respirable):0.05 mg/m3;TWA Table Z-3(respirable):0.1 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls
Provide ventilated enclosure for heat curing. Curing enclosures must be exhausted to outdoors or to a suitable emission control device. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment. Provide local exhaust at process emission sources to control exposure near the source and to prevent the escape of dust into the work area. It is recommended that all dust control equipment (such as local exhaust ventilation), process equipment, and material transport systems involved in handling of this product be evaluated for the need for explosion-protection safeguards. Recognized safeguards include explosion relief vents, explosion suppression systems, and oxygen deficient process environments. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Evaluate the need for electrically classified equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Indirect Vented Goggles

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing. Note: Nitrile gloves may be worn over polymer laminate gloves to improve dexterity.
Gloves made from the following material(s) are recommended: Polymer laminate

If this product is used in a manner that presents a higher potential for exposure (eg. spraying, high splash potential etc.), then use of protective coveralls may be necessary. Select and use body protection to prevent contact based on the results of an exposure assessment. The following protective clothing material(s) are recommended: Apron - polymer laminate

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Half facepiece or full facepiece air-purifying respirator suitable for organic vapors and particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Solid
Specific Physical Form:	Powder
Odor, Color, Grade:	Green Powder

Odor threshold	*No Data Available*
pH	*Not Applicable*
Melting point	*No Data Available*
Boiling Point	*Not Applicable*
Flash Point	No flash point
Evaporation rate	*Not Applicable*
Flammability (solid, gas)	Not Classified
Flammable Limits(LEL)	*No Data Available*
Flammable Limits(UEL)	*No Data Available*
Vapor Pressure	*Not Applicable*
Vapor Density	*Not Applicable*
Vapor Density	*Not Applicable*
Density	1.44 g/cm3
Specific Gravity	1.44 [*Ref Std:*WATER=1]
Solubility in Water	Nil
Solubility- non-water	*No Data Available*
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*Not Applicable*
Decomposition temperature	*No Data Available*
Viscosity	*Not Applicable*
Molecular weight	*No Data Available*
Volatile Organic Compounds	0 %
Percent volatile	0 %
VOC Less H2O & Exempt Solvents	0 %
***Dust deflagration index (Kst)**	70 - 250 bar.m/s [*Details:*Typical Range]
Flash Point as text	No flash point
***Min. explosible conc.(MEC)**	35 - 55 g/m3 [*Details:*Typical Range]
***Min. ignition energy (MIE)**	3 - 100 mJ [*Details:*Typical Range]
***Min. ign temp(MIT)-dust cloud**	450 - 550 ºC [*Details:*Typical Range]

* The values noted with an asterisk (*) in the above table are representative values based on testing of raw materials and selected products. Additionally, a material's characteristics may change depending upon the process and conditions of use at a facility, including further changes in particle size, or mixture with other materials. In order to obtain specific data for the material, we recommend the user conduct characterization testing based on the use factors at the specific facility.

SECTION 10: Stability and reactivity

10.1. Reactivity
This material is considered to be non reactive under normal use conditions.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
Sparks and/or flames

10.5. Incompatible materials
None known.

10.6. Hazardous decomposition products

Substance	Condition

None known.

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Vapors released during curing may cause irritation of the respiratory system. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Dust from cutting, grinding, sanding or machining may cause irritation of the respiratory system. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

Skin Contact:
Mild Skin Irritation: Signs/symptoms may include localized redness, swelling, itching, and dryness. Allergic Skin Reaction (non-photo induced): Signs/symptoms may include redness, swelling, blistering, and itching.

Photosensitization: Signs/symptoms may include a sunburn-like reaction such as blistering, redness, swelling, and itching from minor exposure to sunlight.

Eye Contact:
Moderate Eye Irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Dust created by cutting, grinding, sanding, or machining may cause eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

May cause additional health effects (see below).

Additional Health Effects:

Reproductive/Developmental Toxicity:
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Carcinogenicity:
Contains a chemical or chemicals which can cause cancer.

Ingredient	CAS No.	Class Description	Regulation
SILICA, CRYS AIRRESP	14808-60-7	Known human carcinogen	National Toxicology Program Carcinogens
QUARTZ SILICA	14808-60-7	Grp. 1: Carcinogenic to humans	International Agency for Research on Cancer
Titanium Dioxide	13463-67-7	Grp. 2B: Possible human carc.	International Agency for Research on Cancer

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Dermal	Rat	LD50 > 1,600 mg/kg
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Ingestion	Rat	LD50 > 1,000 mg/kg
CALCIUM SILICATE	Dermal		LD50 estimated to be > 5,000 mg/kg
CALCIUM SILICATE	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
EPOXY RESIN - AMINE CONDENSATE	Dermal	Rat	LD50 > 2,000 mg/kg
EPOXY RESIN - AMINE CONDENSATE	Ingestion	Rat	LD50 > 2,000 mg/kg
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Dermal	Rat	LD50 > 1,600 mg/kg
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Ingestion	Rat	LD50 > 1,000 mg/kg
DICYANDIAMIDE	Dermal	Rabbit	LD50 > 10,000 mg/kg
DICYANDIAMIDE	Ingestion	Rat	LD50 > 30,000 mg/kg
Titanium Dioxide	Dermal	Rabbit	LD50 > 10,000 mg/kg
Titanium Dioxide	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 6.82 mg/l
Titanium Dioxide	Ingestion	Rat	LD50 > 10,000 mg/kg
4,4'-ISOPROPYLIDENEDIPHENOL	Dermal	Rabbit	LD50 > 2,000 mg/kg
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	Rat	LD50 3,200 mg/kg
QUARTZ SILICA	Dermal		LD50 estimated to be > 5,000 mg/kg
QUARTZ SILICA	Ingestion		LD50 estimated to be > 5,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Rabbit	Mild irritant
EPOXY RESIN - AMINE CONDENSATE	Rabbit	No significant irritation
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Rabbit	Mild irritant
DICYANDIAMIDE	Human and animal	Minimal irritation
Titanium Dioxide	Rabbit	No significant irritation
4,4'-ISOPROPYLIDENEDIPHENOL	Rabbit	No significant irritation
QUARTZ SILICA	Professional judgement	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Rabbit	Moderate irritant
EPOXY RESIN - AMINE CONDENSATE	Rabbit	No significant irritation
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Rabbit	Moderate irritant
DICYANDIAMIDE	Professional judgeme	Mild irritant

	nt	
Titanium Dioxide	Rabbit	No significant irritation
4,4'-ISOPROPYLIDENEDIPHENOL	Rabbit	Corrosive

Skin Sensitization

Name	Species	Value
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Human and animal	Sensitizing
EPOXY RESIN - AMINE CONDENSATE	Guinea pig	Sensitizing
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Human and animal	Sensitizing
DICYANDIAMIDE	Guinea pig	Not classified
Titanium Dioxide	Human and animal	Not classified
4,4'-ISOPROPYLIDENEDIPHENOL	official classification	Sensitizing

Photosensitization

Name	Species	Value
4,4'-ISOPROPYLIDENEDIPHENOL	Human and animal	Sensitizing

Respiratory Sensitization

Name	Species	Value
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Human	Not classified
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Human	Not classified

Germ Cell Mutagenicity

Name	Route	Value
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	In vivo	Not mutagenic
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	In Vitro	Some positive data exist, but the data are not sufficient for classification
CALCIUM SILICATE	In Vitro	Not mutagenic
EPOXY RESIN - AMINE CONDENSATE	In Vitro	Not mutagenic
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	In vivo	Not mutagenic
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	In Vitro	Some positive data exist, but the data are not sufficient for classification
DICYANDIAMIDE	In Vitro	Not mutagenic
Titanium Dioxide	In Vitro	Not mutagenic
Titanium Dioxide	In vivo	Not mutagenic
4,4'-ISOPROPYLIDENEDIPHENOL	In vivo	Not mutagenic
4,4'-ISOPROPYLIDENEDIPHENOL	In Vitro	Some positive data exist, but the data are not sufficient for classification
QUARTZ SILICA	In Vitro	Some positive data exist, but the data are not sufficient for classification
QUARTZ SILICA	In vivo	Some positive data exist, but the data are not sufficient for classification

Carcinogenicity

Name	Route	Species	Value
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL	Dermal	Mouse	Some positive data exist, but the data are not

ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER			sufficient for classification
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
DICYANDIAMIDE	Ingestion	Rat	Not carcinogenic
Titanium Dioxide	Ingestion	Multiple animal species	Not carcinogenic
Titanium Dioxide	Inhalation	Rat	Carcinogenic
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	Multiple animal species	Some positive data exist, but the data are not sufficient for classification
QUARTZ SILICA	Inhalation	Human and animal	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation
DICYANDIAMIDE	Ingestion	Not classified for female reproduction	Rat	NOAEL 1,000 mg/kg/day	premating & during gestation
DICYANDIAMIDE	Ingestion	Not classified for male reproduction	Rat	NOAEL 1,000 mg/kg/day	44 days
DICYANDIAMIDE	Ingestion	Not classified for development	Rat	NOAEL 1,000 mg/kg/day	premating & during gestation
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	Not classified for female reproduction	Multiple animal species	NOAEL 50 mg/kg/day	
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	Not classified for male reproduction	Multiple animal species	NOAEL 50 mg/kg/day	
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	Toxic to development	Multiple animal	NOAEL 50 mg/kg/day	

			species		

Target Organ(s)

Specific Target Organ Toxicity - single exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
4,4'-ISOPROPYLIDENEDIPHENOL	Inhalation	respiratory irritation	May cause respiratory irritation	Multiple animal species	LOAEL 0.152 mg/l	15 minutes

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
DI(4-HYDROXYPHENOL)ISOPROPYLIDENE DIGLYCIDYL ETHER-DI(4-HYDROXYPHENOL)ISOPROPYLIDENE COPOLYMER	Ingestion	auditory system | heart | endocrine system | hematopoietic system | liver | eyes | kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
CALCIUM SILICATE	Inhalation	respiratory system	Not classified	Human	NOAEL Not available	occupational exposure
CALCIUM SILICATE	Inhalation	pulmonary fibrosis	Not classified	Human and animal	NOAEL Not available	
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
4,4'-ISOPROPYLIDENEDIPHENOL-EPICHLOROHYDRIN POLYMER	Ingestion	auditory system | heart | endocrine system | hematopoietic system | liver | eyes | kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
DICYANDIAMIDE	Ingestion	kidney and/or bladder	Not classified	Rat	NOAEL 6,822 mg/kg/day	13 weeks
Titanium Dioxide	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 0.01 mg/l	2 years

Titanium Dioxide	Inhalation	pulmonary fibrosis	Not classified	Human	NOAEL Not available	occupational exposure
4,4'-ISOPROPYLIDENEDIPHENOL	Inhalation	liver | kidney and/or bladder | hematopoietic system	Not classified	Rat	NOAEL 0.15 mg/l	13 weeks
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	kidney and/or bladder	Some positive data exist, but the data are not sufficient for classification	Rat	NOAEL 50 mg/kg/day	3 generation
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	liver	Some positive data exist, but the data are not sufficient for classification	Mouse	NOAEL 370 mg/kg/day	13 weeks
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	endocrine system | hematopoietic system	Not classified	Rat	NOAEL 500 mg/kg/day	3 generation
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	nervous system	Not classified	Rat	NOAEL 185 mg/kg/day	90 days
4,4'-ISOPROPYLIDENEDIPHENOL	Ingestion	heart | bone, teeth, nails, and/or hair	Not classified	Mouse	NOAEL 2,400 mg/kg/day	13 weeks
QUARTZ SILICA	Inhalation	silicosis	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure

Aspiration Hazard
For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods
Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate uncured product in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Combustion products will include halogen acid (HCl/HF/HBr). Facility must be capable of handling halogenated materials. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): Not regulated

SECTION 14: Transport Information

For Transport Information, please visit http://3M.com/Transportinfo or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations
Contact 3M for more information.

EPCRA 311/312 Hazard Classifications:

Physical Hazards
Combustible Dust

Health Hazards
Carcinogenicity
Reproductive toxicity
Serious eye damage or eye irritation

15.2. State Regulations
Contact 3M for more information.

15.3. Chemical Inventories
The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

Contact 3M for more information.

15.4. International Regulations
Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 2 **Flammability:** 1 **Instability:** 0 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification
Health: *2 **Flammability:** 1 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® IV) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® IV ratings are to be used with a fully implemented HMIS® IV program. HMIS® is a registered mark of the American Coatings Association (ACA).

Document Group: 11-9658-3 **Version Number:** 29.00

Issue Date: 08/24/18 **Supercedes Date:** 07/25/18

DISCLAIMER: The information in this Safety Data Sheet (SDS) is believed to be correct as of the date issued.3MMAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE.User is responsible for determining whether the3Mproduct is fit for a particular purpose and suitable for user's method of use or application.Given the variety of factors that can affect the use and application of a3Mproduct, some of which are uniquely within the user's knowledge and control,it is essential that the user evaluate the3Mproduct to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3Mprovides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information,3Mmakes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the SDS available directly from3M

3M USA SDSs are available at www.3M.com

Safety Data Sheet

Document Group:	31-4719-6	**Version Number:**	4.01
Issue Date:	07/26/18	**Supercedes Date:**	04/13/18

SECTION 1: Identification

1.1. Product identifier
3M™ Scotchkote™ Fusion Bonded Epoxy Coating 6352 (4G, 8G, and 11G)

Product Identification Numbers
80-6300-0012-5, 80-6300-0022-4, 80-6300-0088-5, 80-6300-0089-3, 80-6300-0314-5, 80-6300-0315-2, 80-6300-0316-0, 80-6300-0317-8, CE-1006-9201-7, CE-1006-9339-5, CE-1006-9646-3, CE-1007-2525-4, CE-1007-2526-2, CE-1007-2577-5, CE-1007-2578-3
7000059822, 7000134456, 7000059821, 7000059812, 7100038174, 7000059820, 7000135080

1.2. Recommended use and restrictions on use

Recommended use
Coating, Fusion Bonded Epoxy Pipe Coating

1.3. Supplier's details

MANUFACTURER:	3M
DIVISION:	Electrical Markets Division
ADDRESS:	3M Center, St. Paul, MN 55144-1000, USA
Telephone:	1-888-3M HELPS (1-888-364-3577)

1.4. Emergency telephone number
1-800-364-3577 or (651) 737-6501 (24 hours)

SECTION 2: Hazard identification

2.1. Hazard classification
Combustible Dust.
Carcinogenicity: Category 1A.
Specific Target Organ Toxicity (repeated exposure): Category 1.

2.2. Label elements
Signal word
Danger

Symbols
Health Hazard |

Pictograms

Hazard Statements
May form combustible dust concentrations in air.

May cause cancer.

Causes damage to organs through prolonged or repeated exposure:
respiratory system |

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wear protective gloves.
Do not eat, drink or smoke when using this product.
Wash thoroughly after handling.

Response:
IF exposed or concerned: Get medical advice/attention.

Storage:
Store locked up.

Disposal:
Dispose of contents/container in accordance with applicable local/regional/national/international regulations.

SECTION 3: Composition/information on ingredients

Ingredient	C.A.S. No.	% by Wt
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	25036-25-3	40 - 60 Trade Secret *
FELDSPARS	68476-25-5	40 - 60 Trade Secret *
Quartz Silica	14808-60-7	3 - 7 Trade Secret *
TITANIUM DIOXIDE	13463-67-7	< 1 Trade Secret *

*The specific chemical identity and/or exact percentage (concentration) of this composition has been withheld as a trade secret.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation:
Remove person to fresh air. If you feel unwell, get medical attention.

Skin Contact:
Wash with soap and water. If signs/symptoms develop, get medical attention.

Eye Contact:
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If Swallowed:
Rinse mouth. If you feel unwell, get medical attention.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1. Information on toxicological effects.

4.3. Indication of any immediate medical attention and special treatment required
Not applicable

SECTION 5: Fire-fighting measures

5.1. Suitable extinguishing media
In case of fire: Use a fire fighting agent suitable for ordinary combustible material such as water or foam to extinguish.

5.2. Special hazards arising from the substance or mixture
Powdered material may form explosive dust-air mixture. Avoid fire fighting methods that would cause powders to become airborne.

Hazardous Decomposition or By-Products

Substance	Condition
Aldehydes	During Combustion
Carbon monoxide	During Combustion
Carbon dioxide	During Combustion
Ammonia	During Combustion
Oxides of Nitrogen	During Combustion

5.3. Special protective actions for fire-fighters
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Eliminate all ignition sources if safe to do so. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapors, in accordance with good industrial hygiene practice. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment. For larger spills, cover drains and build dikes to prevent entry into sewer systems or bodies of water.

6.3. Methods and material for containment and cleaning up
Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air). Use wet sweeping compound or water to avoid dusting. Sweep up. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible in accordance with applicable

local/regional/national/international regulations.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapors/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Use personal protective equipment (gloves, respirators, etc.) as required. Dust clouds of this material in sufficient concentration in combination with an ignition source may be explosive. Dust deposits should not be allowed to accumulate on surfaces because of the potential for secondary explosions. Routine housekeeping should be instituted to ensure that combustible dusts do not accumulate on surfaces. Solids can generate static electricity charges when transferred and in mixing operations sufficient to be an ignition source. Evaluate the need for precautions, such as grounding and bonding, low energy transfer of material (e.g. low speed, short distance), or inert atmospheres.

7.2. Conditions for safe storage including any incompatibilities

Store away from heat. Store away from acids. Store away from strong bases. Store away from amines.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Occupational exposure limits

If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

Ingredient	C.A.S. No.	Agency	Limit type	Additional Comments
TITANIUM DIOXIDE	13463-67-7	ACGIH	TWA:10 mg/m3	A4: Not class. as human carcin
TITANIUM DIOXIDE	13463-67-7	OSHA	TWA(as total dust):15 mg/m3	
Quartz Silica	14808-60-7	ACGIH	TWA(respirable fraction):0.025 mg/m3	A2: Suspected human carcin.
Quartz Silica	14808-60-7	OSHA	TWA Table Z-1(respirable):0.05 mg/m3;TWA Table Z-3(respirable):0.1 mg/m3	

ACGIH : American Conference of Governmental Industrial Hygienists
AIHA : American Industrial Hygiene Association
CMRG : Chemical Manufacturer's Recommended Guidelines
OSHA : United States Department of Labor - Occupational Safety and Health Administration
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

8.2. Exposure controls

8.2.1. Engineering controls

Provide ventilated enclosure for heat curing. Curing enclosures must be exhausted to outdoors or to a suitable emission control device. Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapors/spray. If ventilation is not adequate, use respiratory protection equipment. Provide local exhaust at process emission sources to control exposure near the source and to prevent the escape of dust into the work area. It is recommended that all dust control equipment (such as local exhaust ventilation), process equipment, and material transport systems involved in handling of this product be evaluated for the need for explosion-protection safeguards. Recognized safeguards include explosion relief vents, explosion suppression systems, and oxygen deficient process environments. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). Evaluate the need for electrically classified equipment.

8.2.2. Personal protective equipment (PPE)

Eye/face protection

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:
Safety Glasses with side shields

Skin/hand protection
Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.
Gloves made from the following material(s) are recommended: Nitrile Rubber

Respiratory protection

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:
Full facepiece air-purifying respirator suitable for organic vapors and particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

Thermal hazards
Wear heat insulating gloves when handling hot material to prevent thermal burns.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

General Physical Form:	Solid
Specific Physical Form:	Powder
Odor, Color, Grade:	Brown, odourless;
Odor threshold	*No Data Available*
pH	*No Data Available*
Melting point	*No Data Available*
Boiling Point	*Not Applicable*
Flash Point	No flash point
Evaporation rate	*No Data Available*
Flammability (solid, gas)	Not Classified
Flammable Limits(LEL)	*No Data Available*
Flammable Limits(UEL)	*No Data Available*
Vapor Pressure	*No Data Available*
Vapor Density	*No Data Available*
Density	1.67 g/cm3
Specific Gravity	1.67 [*Ref Std:*WATER=1]
Solubility In Water	*No Data Available*
Solubility- non-water	Nil
Partition coefficient: n-octanol/ water	*No Data Available*
Autoignition temperature	*Not Applicable*
Decomposition temperature	*No Data Available*
Viscosity	*Not Applicable*
VOC Less H2O & Exempt Solvents	0 g/l [*Test Method:*calculated per EPA method 24]
***Dust deflagration index (Kst)**	70 - 250 bar.m/s [*Details:*Typical Range]

Flash Point as text	No flash point
***Min. explosible conc.(MEC)**	35 - 55 g/m3 [*Details:*Typical Range]
***Min. ignition energy (MIE)**	3 - 100 mJ [*Details:*Typical Range]
***Min. ign temp(MIT)-dust cloud**	450 - 550 ºC [*Details:*Typical Range]

* The values noted with an asterisk (*) in the above table are representative values based on testing of raw materials and selected products. Additionally, a material's characteristics may change depending upon the process and conditions of use at a facility, including further changes in particle size, or mixture with other materials. In order to obtain specific data for the material, we recommend the user conduct characterization testing based on the use factors at the specific facility.

SECTION 10: Stability and reactivity

10.1. Reactivity
This material may be reactive with certain agents under certain conditions - see the remaining headings in this section.

10.2. Chemical stability
Stable.

10.3. Possibility of hazardous reactions
Hazardous polymerization will not occur.

10.4. Conditions to avoid
Heat
Sparks and/or flames

10.5. Incompatible materials
Strong acids
Strong bases
Amines

10.6. Hazardous decomposition products

Substance	Condition
None known.	

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

The information below may not be consistent with the material classification in Section 2 if specific ingredient classifications are mandated by a competent authority. In addition, toxicological data on ingredients may not be reflected in the material classification and/or the signs and symptoms of exposure, because an ingredient may be present below the threshold for labeling, an ingredient may not be available for exposure, or the data may not be relevant to the material as a whole.

11.1. Information on Toxicological effects

Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

Inhalation:
Respiratory Tract Irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

May cause additional health effects (see below).

Skin Contact:
Mechanical Skin irritation: Signs/symptoms may include abrasion, redness, pain, and itching.

Eye Contact:
Mechanical eye irritation: Signs/symptoms may include pain, redness, tearing and corneal abrasion.

Ingestion:
Gastrointestinal Irritation: Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea.

Additional Health Effects:

Prolonged or repeated exposure may cause target organ effects:
Silicosis: Signs/symptoms may include breathlessness, weakness, chest pain, persistent cough, increased amounts of sputum, and heart disease.

Carcinogenicity:
Contains a chemical or chemicals which can cause cancer.

Ingredient	CAS No.	Class Description	Regulation
Quartz Silica	14808-60-7	Grp. 1: Carcinogenic to humans	International Agency for Research on Cancer
TITANIUM DIOXIDE	13463-67-7	Grp. 2B: Possible human carc.	International Agency for Research on Cancer

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

Acute Toxicity

Name	Route	Species	Value
Overall product	Ingestion		No data available; calculated ATE >5,000 mg/kg
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Dermal	Rat	LD50 > 1,600 mg/kg
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Ingestion	Rat	LD50 > 1,000 mg/kg
FELDSPARS	Dermal		LD50 estimated to be 2,000 - 5,000 mg/kg
FELDSPARS	Ingestion		LD50 estimated to be 2,000 - 5,000 mg/kg
Quartz Silica	Dermal		LD50 estimated to be > 5,000 mg/kg
Quartz Silica	Ingestion		LD50 estimated to be > 5,000 mg/kg
TITANIUM DIOXIDE	Dermal	Rabbit	LD50 > 10,000 mg/kg
TITANIUM DIOXIDE	Inhalation-Dust/Mist (4 hours)	Rat	LC50 > 6.82 mg/l
TITANIUM DIOXIDE	Ingestion	Rat	LD50 > 10,000 mg/kg

ATE = acute toxicity estimate

Skin Corrosion/Irritation

Name	Species	Value
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Rabbit	No significant irritation
FELDSPARS	Professional judgement	No significant irritation
Quartz Silica	Professional judgement	No significant irritation

TITANIUM DIOXIDE	Rabbit	No significant irritation

Serious Eye Damage/Irritation

Name	Species	Value
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Rabbit	Mild irritant
TITANIUM DIOXIDE	Rabbit	No significant irritation

Skin Sensitization

Name	Species	Value
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Guinea pig	Not classified
TITANIUM DIOXIDE	Human and animal	Not classified

Respiratory Sensitization

Name	Species	Value
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Human	Not classified

Germ Cell Mutagenicity

Name	Route	Value
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	In vivo	Not mutagenic
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	In Vitro	Some positive data exist, but the data are not sufficient for classification
Quartz Silica	In Vitro	Some positive data exist, but the data are not sufficient for classification
Quartz Silica	In vivo	Some positive data exist, but the data are not sufficient for classification
TITANIUM DIOXIDE	In Vitro	Not mutagenic
TITANIUM DIOXIDE	In vivo	Not mutagenic

Carcinogenicity

Name	Route	Species	Value
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Dermal	Mouse	Some positive data exist, but the data are not sufficient for classification
Quartz Silica	Inhalation	Human and animal	Carcinogenic
TITANIUM DIOXIDE	Ingestion	Multiple animal species	Not carcinogenic
TITANIUM DIOXIDE	Inhalation	Rat	Carcinogenic

Reproductive Toxicity

Reproductive and/or Developmental Effects

Name	Route	Value	Species	Test Result	Exposure Duration
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Ingestion	Not classified for female reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Ingestion	Not classified for male reproduction	Rat	NOAEL 750 mg/kg/day	2 generation
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Dermal	Not classified for development	Rabbit	NOAEL 300 mg/kg/day	during organogenesis
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Ingestion	Not classified for development	Rat	NOAEL 750 mg/kg/day	2 generation

Target Organ(s)

Specific Target Organ Toxicity - single exposure
For the component/components, either no data are currently available or the data are not sufficient for classification.

Specific Target Organ Toxicity - repeated exposure

Name	Route	Target Organ(s)	Value	Species	Test Result	Exposure Duration
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Dermal	liver	Not classified	Rat	NOAEL 1,000 mg/kg/day	2 years
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Dermal	nervous system	Not classified	Rat	NOAEL 1,000 mg/kg/day	13 weeks
BISPHENOL A DIGLYCIDYL ETHER-BISPHENOL A COPOLYMER	Ingestion	auditory system | heart | endocrine system | hematopoietic system | liver | eyes | kidney and/or bladder	Not classified	Rat	NOAEL 1,000 mg/kg/day	28 days
Quartz Silica	Inhalation	silicosis	Causes damage to organs through prolonged or repeated exposure	Human	NOAEL Not available	occupational exposure
TITANIUM DIOXIDE	Inhalation	respiratory system	Some positive data exist, but the data are not sufficient for classification	Rat	LOAEL 0.01 mg/l	2 years
TITANIUM DIOXIDE	Inhalation	pulmonary fibrosis	Not classified	Human	NOAEL Not available	occupational exposure

Aspiration Hazard
For the component/components, either no data are currently available or the data are not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

Ecotoxicological information

Please contact the address or phone number listed on the first page of the SDS for additional ecotoxicological information on this material and/or its components.

Chemical fate information

Please contact the address or phone number listed on the first page of the SDS for additional chemical fate information on this material and/or its components.

SECTION 13: Disposal considerations

13.1. Disposal methods
Dispose of contents/ container in accordance with the local/regional/national/international regulations.

Dispose of waste product in a permitted industrial waste facility. As a disposal alternative, incinerate in a permitted waste incineration facility. Proper destruction may require the use of additional fuel during incineration processes. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

EPA Hazardous Waste Number (RCRA): D018 (Benzene)

SECTION 14: Transport Information

For Transport Information, please visit http://3M.com/Transportinfo or call 1-800-364-3577 or 651-737-6501.

SECTION 15: Regulatory information

15.1. US Federal Regulations
Contact 3M for more information.

EPCRA 311/312 Hazard Classifications:

Physical Hazards
Combustible Dust

Health Hazards
Carcinogenicity
Specific target organ toxicity (single or repeated exposure)

15.2. State Regulations
Contact 3M for more information.

15.3. Chemical Inventories
The components of this material are in compliance with the provisions of Australia National Industrial Chemical Notification and Assessment Scheme (NICNAS). Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the new substance notification requirements of CEPA.

The components of this material are in compliance with the China "Measures on Environmental Management of New Chemical Substance". Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of the Korean Toxic Chemical Control Law. Certain restrictions may apply. Contact the selling division for additional information.

The components of this material are in compliance with the provisions of Philippines RA 6969 requirements. Certain restrictions may apply. Contact the selling division for additional information.

The components of this product are in compliance with the chemical notification requirements of TSCA. All required components of this product are listed on the active portion of the TSCA Inventory.

Contact 3M for more information.

15.4. International Regulations
Contact 3M for more information.

This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 16: Other information

NFPA Hazard Classification
Health: 1 **Flammability:** 1 **Instability:** 1 **Special Hazards:** None

National Fire Protection Association (NFPA) hazard ratings are designed for use by emergency response personnel to address the hazards that are presented by short-term, acute exposure to a material under conditions of fire, spill, or similar emergencies. Hazard ratings are primarily based on the inherent physical and toxic properties of the material but also include the toxic properties of combustion or decomposition products that are known to be generated in significant quantities.

HMIS Hazard Classification
Health: *3 **Flammability:** 1 **Physical Hazard:** 0 **Personal Protection:** X - See PPE section.

Hazardous Material Identification System (HMIS® IV) hazard ratings are designed to inform employees of chemical hazards in the workplace. These ratings are based on the inherent properties of the material under expected conditions of normal use and are not intended for use in emergency situations. HMIS® IV ratings are to be used with a fully implemented HMIS® IV program. HMIS® is a registered mark of the American Coatings Association (ACA).

Document Group:	31-4719-6	**Version Number:**	4.01
Issue Date:	07/26/18	**Supercedes Date:**	04/13/18

DISCLAIMER: The information in this Safety Data Sheet (SDS) is believed to be correct as of the date issued.3MMAKES NO WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR COURSE OF PERFORMANCE OR USAGE OF TRADE.User is responsible for determining whether the3Mproduct is fit for a particular purpose and suitable for user's method of use or application.Given the variety of factors that can affect the use and application of a3Mproduct, some of which are uniquely within the user's knowledge and control,it is essential that the user evaluate the3Mproduct to determine whether it is fit for a particular purpose and suitable for user's method of use or application.

3Mprovides information in electronic form as a service to its customers. Due to the remote possibility that electronic transfer may have resulted in errors, omissions or alterations in this information,3Mmakes no representations as to its completeness or accuracy. In addition, information obtained from a database may not be as current as the information in the SDS available directly from3M

3M USA SDSs are available at www.3M.com

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

* 1 Identification of the substance/mixture and of the company/undertaking

Product identifier Powercrete DD Part A (Black)

Trade name: Powercrete DD Part A (Black)

Relevant identified uses of the substance or mixture and uses advised against
Sector of Use
SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Product category PC9a Coatings and paints, thinners, paint removers
Process category
PROC10 Roller application or brushing
PROC11 Non industrial spraying
Environmental release category
ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Application of the substance / the mixture Epoxy resin
Uses advised against -

Details of the supplier of the safety data sheet

Manufacturer/Supplier: Seal For Life Industries - Powercrete ™

Contact details

Seal For Life Industries LLC
103 J.L. Farmer Road, Franklin KY, 42134 USA
Tel. (+1) 508-918-1600, Fax. (+1) 508-918-1910, Email: franklin@sealforlife.com

Seal For Life India Private Ltd.
Plot17, GIDC Savli, Vadodara, Gujarat
Baroda, India - 391775
Tel: +91 266 726 4721, Fax: +91 266 726 4724, Email: india@sealforlife.com

Seal For Life Industries - Stopaq B.V.
Gasselterstraat 20, 9503JB Stadskanaal, the Netherlands
Tel +31 599 696 170, Fax +31 599 696 177, info@sealforlife.com

Information department: Product safety department of manufacturer / supplier

Emergency telephone number:
For worldwide emergency assistance call CHEMTREC (24 hours):
Within USA/Canada 1-800-424-9300; Outside USA/Canada +1 703-527-3887 (collect calls accepted)

* 2 Hazard(s) identification

Classification of the substance or mixture

GHS08 Health hazard

Carc. 1A	H350	May cause cancer. Route of exposure: Inhalative.
STOT RE 1	H372	Causes damage to the lung through prolonged or repeated exposure. Route of exposure: Inhalative.

GHS07

Skin Irrit. 2	H315	Causes skin irritation.
Eye Irrit. 2A	H319	Causes serious eye irritation.

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 1)

Skin Sens. 1 H317 May cause an allergic skin reaction.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

Label elements

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

GHS07 GHS08

Signal word Danger

Hazard-determining components of labeling:
reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)
Quartz (SiO2)
Polypropylene glycol, (chloromethyl) oxirane polymer
Phenol, 4-(1,1-dimethylethyl)-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]

Hazard statements
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause cancer. Route of exposure: Inhalative.
Causes damage to the lung through prolonged or repeated exposure. Route of exposure: Inhalative.
Harmful to aquatic life with long lasting effects.

Precautionary statements
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wear protective gloves.
Wear eye protection / face protection.
Avoid release to the environment.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing must not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see on this label).
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Get medical advice/attention if you feel unwell.
If on skin: Wash with plenty of water.
Take off contaminated clothing and wash it before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)

Health = 2
Fire = 1
Reactivity = 0

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 2)

HMIS-ratings (scale 0 - 4)

Health = 2
Fire = 1
Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not available.

vPvB: Not available.

* 3 Composition/information on ingredients

Chemical characterization: Mixtures

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous components:		
25068-38-6	reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700) Aquatic Chronic 2, H411; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317	10-25%
9072-62-2	Polypropylene glycol, (chloromethyl) oxirane polymer Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317	5.0-10%
67924-34-9	Phenol, 4-(1,1-dimethylethyl)-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol] Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; Aquatic Chronic 4, H413	5.0-10%
14808-60-7	Quartz (SiO2) Carc. 1A, H350; STOT RE 1, H372-H373; Acute Tox. 4, H302; Acute Tox. 4, H332	1.0-2.5%

* 4 First-aid measures

Description of first aid measures

After inhalation:
Call a doctor immediately.
Take affected persons into fresh air and keep quiet.
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.

After skin contact:
Call a doctor immediately.
Remove contaminated clothing
If skin irritation continues, consult a doctor.
Immediately wash with water and soap and rinse thoroughly.

After eye contact:
Call a doctor immediately.
Remove contact lenses
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

After swallowing:
Call a doctor immediately.
Do not induce vomiting
Rinse out mouth and then drink plenty of water.
Never give anything by mouth if victim is rapidly losing consciousness, unconscious or convulsing

Most important symptoms and effects, both acute and delayed No further relevant information available.

Indication of any immediate medical attention and special treatment needed
No further relevant information available.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 3)

5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents:
Water haze
Foam
Fire-extinguishing powder
Carbon dioxide
Special hazards arising from the substance or mixture
Formation of toxic gases is possible during heating or in case of fire.
Advice for firefighters
Protective equipment:
Wear self-contained respiratory protective device.
Wear fully protective suit.

*
6 Accidental release measures

Personal precautions, protective equipment and emergency procedures Not required.
Environmental precautions:
Do not allow to penetrate the ground/soil.
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.
Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

*
7 Handling and storage

Precautions for safe handling
At all times avoid inhalation of the product and contact with skin and eyes
Ensure appropriate ventilation/exhaust at the workplace.
Prevent formation of aerosols.
Information about protection against explosions and fires: No special measures required.

Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility: Store away from oxidizing agents.
Further information about storage conditions:
Store in a dry, cool, well ventilated place
Keep receptacle tightly sealed.
Specific end use(s) No further relevant information available.

*
8 Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 4)

Control parameters

Components with limit values that require monitoring at the workplace:	
14808-60-7 Quartz (SiO2)	
PEL	see Quartz listing
REL	Long-term value: 0.05* mg/m³ *respirable dust; See Pocket Guide App. A
TLV	Long-term value: 0.025* mg/m³ *as respirable fraction

Additional information: The lists that were valid during the creation were used as basis.

Exposure controls

Personal protective equipment:

General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.

Breathing equipment:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use selfcontained respiratory protective device.

Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves
Recommended material:
Butyl rubber, BR
Nitrile rubber, NBR
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles

Body protection: Impervious protective clothing

*
9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

Form:	Viscous
Color:	Black
Odor:	Light

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 5)

Odour threshold:	Not determined.
pH-value:	Not determined.
Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
Flash point:	> 93 °C (> 199 °F)
Flammability (solid, gaseous):	Not applicable.
Ignition temperature:	> 300 °C (> 572 °F)
Decomposition temperature:	Not determined.
Auto igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor pressure:	Not determined.
Density at 20 °C (68 °F):	1.85 g/cm³ (15.438 lbs/gal)
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with	
Water:	Not miscible or difficult to mix.
Segregation coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Solvent content:	
Organic solvents:	0.0 %
Other information	The material polymerizes to 100% solids, after mixing and reaction with the corresponding "Part B" of the product.

10 Stability and reactivity

Reactivity
Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
Possibility of hazardous reactions No dangerous reactions known.
Conditions to avoid No further relevant information available.
Incompatible materials:
Reacts with strong acids.
Reacts with oxidizing agents.
Strong alkalines
Hazardous decomposition products:
Carbon monoxide
Carbon dioxide
Aldehyde

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 6)

* 11 Toxicological information

Information on toxicological effects

Acute toxicity:

LD/LC50 values that are relevant for classification:		
25068-38-6 reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)		
Oral	LD50	>2000 mg/kg (rat)
Dermal	LD50	>4000 mg/kg (rat)
		>22000 mg/kg (rabbit)
9072-62-2 Polypropylene glycol, (chloromethyl) oxirane polymer		
Oral	LD50	>2000 mg/kg (rat)
14808-60-7 Quartz (SiO2)		
Oral	LD50	1300 mg/kg (rat)

Primary irritant effect:

on the skin: Irritant to skin and mucous membranes.

on the eye: Irritating effect.

Sensitization: Sensitization possible through skin contact.

Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

Carcinogenic categories

IARC (International Agency for Research on Cancer)		
14808-60-7	Quartz (SiO2)	1

NTP (National Toxicology Program)		
14808-60-7	Quartz (SiO2)	K

OSHA-Ca (Occupational Safety & Health Administration)	
67924-34-9	Phenol, 4-(1,1-dimethylethyl)-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene) bis[phenol]

* 12 Ecological information

Toxicity

Aquatic toxicity:	
25068-38-6 reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)	
EC50/24h	3.6 mg/l (Daphnia magna)
EC50/48h	1.4-1.7 mg/l (Daphnia magna)
LC50/96h	1.5 mg/l (Fish - Oncorhynchus mykiss)
	2.4 mg/l (Fish - Brachydanio rerio)

Persistence and degradability No further relevant information available.

Bioaccumulative potential No further relevant information available.

Mobility in soil No further relevant information available.

Ecotoxical effects:

Remark: Harmful to fish

Additional ecological information:

General notes:

Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.

(Contd. on page 8)

USA

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 7)

Harmful to aquatic organisms

Results of PBT and vPvB assessment

PBT: Not available.

vPvB: Not available.

Other adverse effects No further relevant information available.

13 Disposal considerations

Waste treatment methods

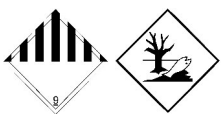
Recommendation:

Dispose safely in accordance with local and national legislations
Non-dangerous when mixed and fully cured with accompanying hardener.
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

* 14 Transport information

UN-Number	
DOT, ADR, IMDG, IATA	UN3082
UN proper shipping name	
DOT	Environmentally hazardous substances, liquid, n.o.s. (reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))
ADR	3082 Environmentally hazardous substances, liquid, n.o.s. (reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))
IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)), MARINE POLLUTANT
IATA	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700))
Transport hazard class(es)	
DOT	
Class	9 Miscellaneous dangerous substances and articles
Label	9
ADR, IMDG, IATA	
Class	9 Miscellaneous dangerous substances and articles
Label	9

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 8)

Packing group	
DOT, ADR, IMDG, IATA	III
Environmental hazards:	
Marine pollutant:	Yes Symbol (fish and tree)
Special marking (ADR):	Symbol (fish and tree)
Special marking (IATA):	Symbol (fish and tree)
Special precautions for user	Warning: Miscellaneous dangerous substances and articles
Danger code (Kemler):	90
EMS Number:	F-A,S-F
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
DOT	
Quantity limitations	On cargo aircraft only: No limits On passenger aircraft/rail: No limits
ADR	
Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
UN "Model Regulation":	UN3082, Environmentally hazardous substances, liquid, n.o.s. (reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)), 9, III

* 15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
Sara

Section 355 (extremely hazardous substances):
None of the ingredients is listed.

Section 313 (Specific toxic chemical listings):
None of the ingredients is listed.

TSCA (Toxic Substances Control Act):
All ingredients of this product are included, or are exempted from inclusion in the EPA Toxic Substances Control Act (TSCA) Chemical Substance Inventory

Proposition 65

Chemicals known to cause cancer:

14808-60-7	Quartz (SiO2)

Chemicals known to cause reproductive toxicity for females:
None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males:
None of the ingredients is listed.

Chemicals known to cause developmental toxicity:
None of the ingredients is listed.

(Contd. on page 10)

USA

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 9)

Carcinogenic categories

EPA (Environmental Protection Agency)		
None of the ingredients is listed.		

TLV (Threshold Limit Value established by ACGIH)		
14808-60-7	Quartz (SiO2)	A2

NIOSH-Ca (National Institute for Occupational Safety and Health)	
14808-60-7	Quartz (SiO2)

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

GHS07 GHS08

Signal word Danger

Hazard-determining components of labeling:
reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight ≤ 700)
Quartz (SiO2)
Polypropylene glycol, (chloromethyl) oxirane polymer
Phenol, 4-(1,1-dimethylethyl)-, polymer with (chloromethyl)oxirane and 4,4'-(1-methylethylidene)bis[phenol]

Hazard statements
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause cancer. Route of exposure: Inhalative.
Causes damage to the lung through prolonged or repeated exposure. Route of exposure: Inhalative.
Harmful to aquatic life with long lasting effects.

Precautionary statements
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not breathe dust/fume/gas/mist/vapors/spray.
Wear protective gloves.
Wear eye protection / face protection.
Avoid release to the environment.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing must not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see on this label).
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Get medical advice/attention if you feel unwell.
If on skin: Wash with plenty of water.
Take off contaminated clothing and wash it before reuse.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

(Contd. on page 11)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 6 Reviewed on 12/03/2014

Trade name: Powercrete DD Part A (Black)

(Contd. of page 10)

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS: Product safety department
Contact:
Seal For Life Technologies & Services B.V.
Gasselterstraat 20, 9503JB Stadskanaal, the Netherlands
Tel: +31 599 696 170; Fax. +31 599 696 177; Email: info@sealforlife.com

Date of preparation / last revision 12/03/2014 / 5

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 1A: Carcinogenicity, Hazard Category 1A
STOT RE 1: Specific target organ toxicity - Repeated exposure, Hazard Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2
Aquatic Chronic 3: Hazardous to the aquatic environment - Chronic Hazard, Category 3
Aquatic Chronic 4: Hazardous to the aquatic environment - Chronic Hazard, Category 4

*** Data compared to the previous version altered.**

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

* 1 Identification of the substance/mixture and of the company/undertaking

Product identifier Powercrete DD Part B

Trade name: Powercrete DD Part B

Relevant identified uses of the substance or mixture and uses advised against
Sector of Use
SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
Product category PC9a Coatings and paints, thinners, paint removers
Process category
PROC10 Roller application or brushing
PROC11 Non industrial spraying
Environmental release category
ERC8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Application of the substance / the mixture Epoxy curing agent
Uses advised against -

Details of the supplier of the safety data sheet

Manufacturer/Supplier: Seal For Life Industries - Powercrete ™

Contact details

Seal For Life Industries LLC
103 J.L. Farmer Road, Franklin KY, 42134 USA
Tel. (+1) 508-918-1600, Fax. (+1) 508-918-1910, Email: franklin@sealforlife.com

Seal For Life India Private Ltd.
Plot17, GIDC Savli, Vadodara, Gujarat
Baroda, India - 391775
Tel: +91 266 726 4721, Fax: +91 266 726 4724, Email: india@sealforlife.com

Seal For Life Industries - Stopaq B.V.
Gasselterstraat 20, 9503JB Stadskanaal, the Netherlands
Tel +31 599 696 170, Fax +31 599 696 177, info@sealforlife.com

Information department: Product safety department of manufacturer / supplier

Emergency telephone number:
For worldwide emergency assistance call CHEMTREC (24 hours):
Within USA/Canada 1-800-424-9300; Outside USA/Canada +1 703-527-3887 (collect calls accepted)

* 2 Hazard(s) identification

Classification of the substance or mixture


GHS06 Skull and crossbones

Acute Tox. 2	H330	Fatal if inhaled.


GHS08 Health hazard

Resp. Sens. 1	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Repr. 1A	H360	May damage fertility or the unborn child.
STOT SE 1	H370-H335	Causes damage to the lung, the kidneys, the liver and the respiratory system. Route of exposure: Oral, Inhalative. May cause respiratory irritation.

(Contd. on page 2)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 1)


GHS05 Corrosion

Skin Corr. 1B	H314	Causes severe skin burns and eye damage.
Eye Dam. 1	H318	Causes serious eye damage.


GHS07

Acute Tox. 4	H302	Harmful if swallowed.
Acute Tox. 4	H312	Harmful in contact with skin.
Skin Sens. 1	H317	May cause an allergic skin reaction.

Label elements

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms


GHS05 GHS06 GHS08

Signal word Danger

Hazard-determining components of labeling:
2,2'-iminodiethylamine
bisphenol A
Polyethylene Polyamine 1 (proprietary)
3-aminomethyl-3,5,5-trimethylcyclohexylamine

Hazard statements
Harmful if swallowed or in contact with skin.
Fatal if inhaled.
Causes severe skin burns and eye damage.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
Causes damage to the lung, the kidneys, the liver and the respiratory system. Route of exposure: Oral, Inhalative. May cause respiratory irritation.

Precautionary statements
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not breathe dusts or mists.
Wear respiratory protection.
Wear protective gloves.
Wear protective gloves / protective clothing.
Wear eye protection / face protection.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison center/doctor.
Specific treatment is urgent (see on this label).

(Contd. on page 3)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 2)

If experiencing respiratory symptoms: Call a poison center/doctor.
If swallowed: Call a poison center/doctor if you feel unwell.
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention.
If swallowed: Rinse mouth. Do NOT induce vomiting.
Take off contaminated clothing and wash it before reuse.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)

Health = 3
Fire = 1
Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = *3
Fire = 1
Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not available.

vPvB: Not available.

* 3 Composition/information on ingredients

Chemical characterization: Mixtures

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous components:		
111-40-0	2,2'-iminodiethylamine Acute Tox. 2, H330; Skin Corr. 1B, H314; Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Sens. 1, H317; STOT SE 3, H335	25-50%
80-05-7	bisphenol A Repr. 2, H361; Eye Dam. 1, H318; Skin Sens. 1, H317; STOT SE 3, H335	25-50%
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine Skin Corr. 1B, H314; Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Sens. 1, H317; Aquatic Chronic 3, H412	5.0-10%
	Polyethylene Polyamine 1 (proprietary) Acute Tox. 2, H300; Acute Tox. 3, H311; Resp. Sens. 1, H334; Repr. 1B, H360; STOT SE 1, H370-H335; Eye Dam. 1, H318; Skin Irrit. 2, H315; Skin Sens. 1, H317	1.0-2.5%
	Polyethylene Polyamine 2 (proprietary) Acute Tox. 3, H311; Resp. Sens. 1, H334; Repr. 1A, H360; STOT SE 1, H370-H335; Eye Dam. 1, H318; Skin Irrit. 2, H315; Skin Sens. 1, H317	1.0-2.5%

* 4 First-aid measures

Description of first aid measures

General information:

Take affected persons out of danger area and lay down.
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

(Contd. on page 4)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 3)

After inhalation:
Call a doctor immediately.
Take affected persons into fresh air and keep quiet.
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.
After skin contact:
Call a doctor immediately.
Remove contaminated clothing
Immediately wash with water and soap and rinse thoroughly.
After eye contact:
Call a doctor immediately.
Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing:
Call a doctor immediately.
Do not induce vomiting
Rinse mouth with water
Never give anything by mouth if victim is rapidly losing consciousness, unconscious or convulsing
Immediately call a doctor.
Drink copious amounts of water and provide fresh air. Immediately call a doctor.

Most important symptoms and effects, both acute and delayed
Breathing difficulty
Coughing
Asthma attacks
Allergic reactions

Indication of any immediate medical attention and special treatment needed
Medical supervision for at least 48 hours.

* 5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents:
Water haze
Foam
Fire-extinguishing powder
Carbon dioxide

Special hazards arising from the substance or mixture
Formation of toxic gases is possible during heating or in case of fire.
In case of fire, the following can be released:
Nitrogen oxides (NOx)
nitrogen containing compounds
Carbon monoxide (CO)
Carbon dioxide (CO_2)

Advice for firefighters
Protective equipment:
Wear self-contained respiratory protective device.
Wear fully protective suit.
Additional information Cool endangered receptacles with water spray.

* 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Use respiratory protective device against the effects of fumes/dust/aerosol.
Keep away from ignition sources
Wear protective equipment. Keep unprotected persons away.

Environmental precautions:
Do not allow to penetrate the ground/soil.
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Dilute with plenty of water.

(Contd. on page 5)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 4)

Do not allow to enter sewers/ surface or ground water.

Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

* 7 Handling and storage

Precautions for safe handling
At all times avoid inhalation of the product and contact with skin and eyes
Ensure appropriate ventilation/exhaust at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.

Information about protection against explosions and fires: Keep respiratory protective device available.

Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Store away from oxidizing agents.

Further information about storage conditions:
Store in a dry, cool, well ventilated place
Keep receptacle tightly sealed.

Specific end use(s) No further relevant information available.

* 8 Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

Control parameters

Components with limit values that require monitoring at the workplace:	
111-40-0 2,2'-iminodiethylamine	
REL	Long-term value: 4 mg/m³, 1 ppm Skin
TLV	Long-term value: 4.2 mg/m³, 1 ppm Skin
Polyethylene Polyamine 1 (proprietary)	
AIHA WEEL TWA	Long-term value: 1 ppm
Polyethylene Polyamine 2 (proprietary)	
ACGIH TLV TWA	Long-term value: 4.2 mg/m³, 1 ppm

Additional information: The lists that were valid during the creation were used as basis.

Exposure controls

Personal protective equipment:

General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.

(Contd. on page 6)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 5)

Breathing equipment:
Self-contained respiratory protective device.
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use selfcontained respiratory protective device.

Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves
Recommended material:
Butyl rubber, BR
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles

Body protection: Impervious protective clothing

*
9 Physical and chemical properties

Information on basic physical and chemical properties	
General Information	
Appearance:	
Form:	Fluid
Color:	Light brown
Odor:	Amine-like
Odour threshold:	Not determined.
pH-value:	Not determined.
Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
Flash point:	> 93 °C (> 199 °F)
Flammability (solid, gaseous):	Not applicable.
Ignition temperature:	325 °C (617 °F)
Decomposition temperature:	Not determined.
Auto igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	1.0 Vol %

(Contd. on page 7)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 6)

Upper:	10.0 Vol %
Vapor pressure at 20 °C (68 °F):	0.5 hPa
Density at 20 °C (68 °F):	1.01 g/cm³ (8.428 lbs/gal)
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with Water:	Fully miscible.
Segregation coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Solvent content:	
Organic solvents:	0.0 %
Other information	The material polymerizes to 100% solids, after mixing and reaction with the corresponding "Part A" of the product.

10 Stability and reactivity

Reactivity
Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
Possibility of hazardous reactions
Reacts with strong oxidizing agents.
Reacts with acids.
Reacts with alkali (lyes).
Conditions to avoid No further relevant information available.
Incompatible materials:
Reacts with oxidizing agents.
Reacts with strong acids.
Strong alkalines
Hazardous decomposition products:
Nitrogen oxides
Carbon monoxide
Nitrogen containing compounds

* 11 Toxicological information

Information on toxicological effects
Acute toxicity:

LD/LC50 values that are relevant for classification:		
111-40-0 2,2'-iminodiethylamine		
Oral	LD50	1553 mg/kg (rat)
Dermal	LD50	1045 mg/kg (rabbit)
Inhalative	LC50/4h	0.3 mg/l (rat) (OECD Guideline 403)
80-05-7 bisphenol A		
Oral	LD50	3250 mg/kg (rat)
Dermal	LD50	3000 mg/kg (rabbit)
2855-13-2 3-aminomethyl-3,5,5-trimethylcyclohexylamine		
Oral	LD50	1030 mg/kg (rat) (OECD 401 (similar))

(Contd. on page 8)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 7)

Dermal	LD50	>2000 mg/kg (rat) (OECD 402)
Inhalative	LC50/4h	>5 mg/l (rat) (OECD 403)
Polyethylene Polyamine 1 (proprietary)		
Oral	LD50	38.5 mg/kg (mouse)
		1080 mg/kg (rat)
		5500 mg/kg (rabbit)
Dermal	LD50	675 mg/kg (rabbit)
Polyethylene Polyamine 2 (proprietary)		
Oral	LD50	2800 mg/kg (rat)
Dermal	LD50	550 mg/kg (rabbit)

Primary irritant effect:
on the skin: Caustic effect on skin and mucous membranes.
on the eye: Strong caustic effect.
Sensitization:
Sensitization possible through inhalation.
Sensitization possible through skin contact.
Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Corrosive
Irritant
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

Carcinogenic categories

IARC (International Agency for Research on Cancer)
None of the ingredients is listed.

NTP (National Toxicology Program)
None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients is listed.

* 12 Ecological information

Toxicity

Aquatic toxicity:	
111-40-0 2,2'-iminodiethylamine	
EC50/48h	16 mg/l (Daphnia magna) (DIN 38412, part 11)
LC50/96h	430 mg/l (fish)
80-05-7 bisphenol A	
EC50/48h (static)	10.2 mg/l (Daphnia magna)
EC50/96h (static)	2.73 mg/l (Algae - Pseudokirchneriella subcapitata)
LC50/96h (dynamic)	11 mg/l (Fish - Cyprinodon variegatus) (OECD nr. 203)
2855-13-2 3-aminomethyl-3,5,5-trimethylcyclohexylamine	
EC50/48h	23 mg/l (Daphnia magna)
EC50/72h	37 mg/l (Algae - Scenedesmus subspicatus)
LC50/96h	110 mg/l (Fish - Leuciscus idus)
NOEC/21days	3 mg/l (Daphnia magna)

Persistence and degradability No further relevant information available.
Bioaccumulative potential No further relevant information available.
Mobility in soil No further relevant information available.

(Contd. on page 9)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 8)

Ecotoxical effects:
Remark: Harmful to fish
Additional ecological information:
General notes:
Water hazard class 3 (Self-assessment): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even extremely small quantities leak into the ground.
Harmful to aquatic organisms
Results of PBT and vPvB assessment
PBT: Not available.
vPvB: Not available.
Other adverse effects No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation:
Dispose safely in accordance with local and national legislations
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agent: Water, if necessary with cleansing agents.

* 14 Transport information

UN-Number	
DOT, ADR, IMDG, IATA	UN2735
UN proper shipping name	
DOT	Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine, Isophoronediamine)
ADR	2735 Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine, Isophoronediamine)
IMDG, IATA	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIETHYLENETRIAMINE, ISOPHORONEDIAMINE)
Transport hazard class(es)	
DOT	

Class	8 Corrosive substances
Label	8
ADR, IMDG, IATA	

Class	8 Corrosive substances
Label	8

(Contd. on page 10)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 9)

Packing group	
DOT, ADR, IMDG, IATA	II
Environmental hazards:	
Marine pollutant:	No
Special precautions for user	Warning: Corrosive substances
Danger code (Kemler):	80
EMS Number:	F-A,S-B
Segregation groups	Alkalis
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
DOT	
Quantity limitations	On passenger aircraft/rail: 1 L On cargo aircraft only: 30 L
ADR	
Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
IMDG	
Limited quantities (LQ)	1L
Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
UN "Model Regulation":	UN2735, Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine, Isophoronediamine), 8, II

* 15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
Sara

Section 355 (extremely hazardous substances):
None of the ingredients is listed.

Section 313 (Specific toxic chemical listings):	
80-05-7	bisphenol A

TSCA (Toxic Substances Control Act):	
111-40-0	2,2'-iminodiethylamine
80-05-7	bisphenol A
2855-13-2	3-aminomethyl-3,5,5-trimethylcyclohexylamine
	Polyethylene Polyamine 1 (proprietary)
	Polyethylene Polyamine 2 (proprietary)

Proposition 65

Chemicals known to cause cancer:
None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females:
None of the ingredients is listed.

(Contd. on page 11)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 10)

Chemicals known to cause reproductive toxicity for males:
None of the ingredients is listed.

Chemicals known to cause developmental toxicity:
None of the ingredients is listed.

Carcinogenic categories

EPA (Environmental Protection Agency)
None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)
None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients is listed.

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

GHS05 GHS06 GHS08

Signal word Danger

Hazard-determining components of labeling:
2,2'-iminodiethylamine
bisphenol A
Polyethylene Polyamine 1 (proprietary)
3-aminomethyl-3,5,5-trimethylcyclohexylamine

Hazard statements
Harmful if swallowed or in contact with skin.
Fatal if inhaled.
Causes severe skin burns and eye damage.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
May damage fertility or the unborn child.
Causes damage to the lung, the kidneys, the liver and the respiratory system. Route of exposure: Oral, Inhalative. May cause respiratory irritation.

Precautionary statements
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not breathe dusts or mists.
Wear respiratory protection.
Wear protective gloves.
Wear protective gloves / protective clothing.
Wear eye protection / face protection.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing must not be allowed out of the workplace.
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a poison center/doctor.
Specific treatment is urgent (see on this label).
If experiencing respiratory symptoms: Call a poison center/doctor.
If swallowed: Call a poison center/doctor if you feel unwell.

(Contd. on page 12)

Safety Data Sheet
acc. to OSHA HCS

Printing date 12/03/2014 Version 9 Reviewed on 12/03/2014

Trade name: Powercrete DD Part B

(Contd. of page 11)

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
Wash contaminated clothing before reuse.
IF exposed or concerned: Get medical advice/attention.
If skin irritation or rash occurs: Get medical advice/attention.
If swallowed: Rinse mouth. Do NOT induce vomiting.
Take off contaminated clothing and wash it before reuse.
Store locked up.
Store in a well-ventilated place. Keep container tightly closed.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS: Product safety department
Contact:
Seal For Life Technologies & Services B.V.
Gasselterstraat 20, 9503JB Stadskanaal, the Netherlands
Tel: +31 599 696 170; Fax. +31 599 696 177; Email: info@sealforlife.com

Date of preparation / last revision 12/03/2014 / 8

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Acute Tox. 4: Acute toxicity, Hazard Category 4
Acute Tox. 3: Acute toxicity, Hazard Category 3
Acute Tox. 2: Acute toxicity, Hazard Category 2
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Repr. 1A: Reproductive toxicity, Hazard Category 1A
Repr. 1B: Reproductive toxicity, Hazard Category 1B
Repr. 2: Reproductive toxicity, Hazard Category 2
STOT SE 1: Specific target organ toxicity - Single exposure, Hazard Category 1
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
Aquatic Chronic 3: Hazardous to the aquatic environment - Chronic Hazard, Category 3

*** Data compared to the previous version altered.**

Section 1: IDENTIFICATION

Product Name:	SP-2888® R.G. Brush Base
Product Identifier:	PART "A" BASE
Product Code:	850-280
Detail	Epoxy/Urethane. White.
Product Use:	Exterior coating for pipelines.
Restrictions on Use:	Not available.
Manufacturer/Supplier:	Specialty Polymer Coatings, Inc. 48 Bury Court Brantford, ON, N3S 0B1 Canada
24 Hour Emergency Phone:	In Canada, call CANUTEC: 1-613-996-6666 In USA, call CHEMTREC: 1-800-424-9300
Date of Preparation of SDS:	March 6, 2019

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification:
Skin Irritation, Category 2
Eye Irritation, Category 2A
Sensitization - Skin, Category 1
Carcinogenicity, Category 1A
Specific Target Organ Toxicity (Repeated Exposure), Category 1

LABEL ELEMENTS

Hazard Pictogram(s):

Signal Word: Danger

Hazard Statements:
Causes skin irritation. Causes serious eye irritation.
May cause an allergic skin reaction.
May cause cancer.
Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust, mist, vapours, or spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves, protective clothing and eye protection.

Response:
IF ON SKIN: Wash with plenty of water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact

lenses, if present and easy to do. Continue rinsing.
Get medical advice/attention if you feel unwell.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

Storage: Store locked up.

Disposal: Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: 10% of this product mixture consists of ingredient(s) of unknown acute toxicity.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

This material is considered hazardous by the Hazardous Products Regulations, 2015.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Oxirane, 2,2'-((1-methylethylidene)bis(4,1-phenyleneoxymethylene))bis-, homopolymer	Not available.	25085-99-8	30 - 40
Phenol, polymer with formaldehyde, glycidyl ether	Not available.	28064-14-4	10 - 15
Titanium oxide (TiO2)	Titanium dioxide	13463-67-7	4 - 6
Oxirane, 2,2'-[(2,2-dimethyl-1,3-propanediyl)bis(oxymethylene)]bis-	Neopentyl glycol diglycidyl ether	17557-23-2	3 - 4
Quartz (SiO2)	Quartz	14808-60-7	3 - 4
2-Propenenitrile, polymer with 1,3-butadiene, carboxy-terminated, polymer with 2,2'-[(2,2-dimethyl-1,3-propanediyl)bis(oxymethylene)]bis [oxirane]	Neopentylglycol glycidyl ether, carboxy terminated copolymer of acrylonitrile, butadiene adduct	68909-14-8	1 - 2
Oxirane, 2,2'-[1,4-cyclohexanediylbis (methyleneoxymethylene)]bis-	1,4-Bis(glycidyloxymethyl) cyclohexane	14228-73-0	1 - 2
Poly(oxy(methyl-1,2-ethanediyl)), alpha,alpha',alpha''-1,2,3-propanetriyltris(omega-(2-oxiranylmethoxy)-	Not available.	37237-76-6	1 - 2

Section 4: FIRST-AID MEASURES

Inhalation: If inhaled: Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain.

As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Inhalation of Titanium dioxide may cause blood changes. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO2) dust has occurred. Coughing and irritation of throat are early symptoms.

Eye Contact: If in eyes: Rinse cautiously with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Acute and delayed symptoms and effects: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin Contact: If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

Acute and delayed symptoms and effects: May cause an allergic skin reaction. Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: If swallowed: Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Ingestion of Titanium dioxide may cause ataxia (failure of muscular coordination), increased blood pressure, hallucinations, hypermotility, muscle contraction/spasticity, fatigue, psychosis, and tremors.

General Advice: In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians: Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Not flammable or combustible by OSHA/WHMIS criteria.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: This material is not sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Dry chemical, CO2, water spray or regular foam.

Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media: Not available.

Products of Combustion:	Oxides of carbon. Oxides of nitrogen. Aldehydes.
Protection of Firefighters:	Runoff from fire control or dilution water may cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures:	Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.
Personal Precautions:	Do not touch or walk through spilled material. Use personal protection recommended in Section 8.
Environmental Precautions:	Keep out of drains, sewers, ditches, and waterways.
Methods for Containment:	Stop leak if without risk. Do not flush to sewer or allow to enter waterways.
Methods for Clean-Up:	Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
Other Information:	See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:
Do not swallow. Do not breathe dust, mist, vapours, or spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. See Section 8 for information on Personal Protective Equipment.

Storage:
Store locked up. The acceptable shipping and storage temperature range is between 5 °C (41 °F) and 50 °C (122 °F). Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

Oxirane, 2,2'-((1-methylethylidene)bis(4,1-phenyleneoxymethylene))bis-, homopolymer [CAS No. 25085-99-8]
ACGIH: No TLV established.
OSHA: No PEL established.

Phenol, polymer with formaldehyde, glycidyl ether [CAS No. 28064-14-4]
ACGIH: No TLV established.
OSHA: No PEL established.

Titanium dioxide [CAS No. 13463-67-7]
ACGIH: 10 mg/m³ (TWA); A4 (1992)
OSHA: 15 mg/m³ (Total dust) (TWA);
10 mg/m³ (TWA) (Total dust) [Vacated];

Neopentyl glycol diglycidyl ether [CAS No. 17557-23-2]
ACGIH: No TLV established.
OSHA: No PEL established.

Quartz [CAS No. 14808-60-7]
ACGIH: 0.025 mg/m³ (TWA); A2; Respirable fraction (2009)
OSHA: 30 / (%SiO2 + 2) mg/m³ Quartz (Total dust) (TWA), 10 / (%SiO2 + 2) mg/m³ Quartz (Respirable) & 250 / (%SiO2 + 5) mppcf Quartz (Respirable) (TWA); See Table Z3.
0.1 mg/m³ (As respirable quartz) (TWA) [Vacated];

Neopentylglycol glycidyl ether, carboxy terminated copolymer of acrylonitrile, butadiene adduct [CAS No. 68909-14-8]
ACGIH: No TLV established.
OSHA: No PEL established.

1,4-Bis(glycidyloxymethyl)cyclohexane [CAS No. 14228-73-0]
ACGIH: No TLV established.
OSHA: No PEL established.

Poly(oxy(methyl-1,2-ethanediyl)), alpha,alpha',alpha''-1,2,3-propanetriyltris(omega-(2-oxiranylmethoxy)- [CAS No. 37237-76-6]
ACGIH: No TLV established.
OSHA: No PEL established.

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye/Face Protection: Wear chemical safety glasses, goggles, and/or full face shield. Ensure that eyewash stations are close to the workstation location. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection: Chemical resistant gloves with a long cuff that will overlap the clothing sleeves should be worn when handling this product. The glove/clothing overlaps should be sealed by tape. Check with the glove manufacturer to determine the proper glove type.

Skin and Body Protection: Long-sleeved protective clothing is to be worn over regular clothing to cover all exposed areas of arms, legs or torso during mixing and application of the coating. Breathable clothing, such as cotton or disposable coveralls, is recommended.

Respiratory Protection: If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators. Wear a dust respirator for any activity such as sanding or grinding of cured coating.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Specialty Polymer Coatings, Inc. has consulted a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection. These measures are reflected in our comprehensive training of customer employees.

Other: A barrier cream may be used in conjunction with Personal Protective Equipment as an additional safeguard against skin contact.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Viscous liquid.
Colour:	White.
Odour:	Faint epoxy odour.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH:	Not available.
Melting Point / Freezing Point:	Not available.
Initial Boiling Point:	> 300 °C (572 °F)
Boiling Range:	Not available.
Flash Point:	> 100 °C (212 °F) (SFCC)
Evaporation Rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapour Pressure:	Not available.
Vapour Density:	Not available.
Relative Density:	1.55 (Water = 1) at 25 °C (77 °F)
Solubilities:	Negligible solubility in water at 20 °C (68 °F).

Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	Not available.
Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.
Density:	Not available.
Coefficient of Water/Oil Distribution:	Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability:	Stable under normal storage conditions.
Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials:	Acids. Bases. Oxidizers. Amines.

Hazardous Decomposition Products: Oxides of carbon. Oxides of nitrogen. Aldehydes.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral:	Not available.
Dermal:	Not available.
Inhalation:	Not available.

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
Oxirane, 2,2'-((1-methylethylidene)bis(4,1-phenyleneoxymethylene)) bis-, homopolymer	25085-99-8	> 15000 mg/kg (rat)	23000 mg/kg (rabbit)	Not available.
Phenol, polymer with formaldehyde, glycidyl ether	28064-14-4	> 2000 mg/kg (rat)	> 2000 mg/kg (rat)	Not available.
Titanium dioxide	13463-67-7	Not available.	Not available.	Not available.
Neopentyl glycol diglycidyl ether	17557-23-2	4500 mg/kg (rat)	Not available	
Quartz	14808-60-7	Not available.	Not available.	0.3 mg/m³ (human); 10Y

Neopentylglycol glycidyl ether, carboxy terminated copolymer of acrylonitrile, butadiene adduct	68909-14-8	Not available.	Not available.	Not available.
1,4-Bis(glycidyloxymethyl) cyclohexane	14228-73-0	Not available.	Not available.	Not available.
Poly(oxy(methyl-1,2-ethanediyl)), alpha,alpha', alpha''-1,2,3-propanetriyltris (omega-(2-oxiranylmethoxy)-	37237-76-6	Not available.	Not available.	Not available.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs.

Symptoms (including delayed and immediate effects)

Inhalation: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Inhalation of Titanium dioxide may cause blood changes. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO2) dust has occurred. Coughing and irritation of throat are early symptoms.

Eye: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin: May cause an allergic skin reaction. Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Ingestion of Titanium dioxide may cause ataxia (failure of muscular coordination), increased blood pressure, hallucinations, hypermotility, muscle contraction/spasticity, fatigue, psychosis, and tremors.

Skin Sensitization: Hazardous by OSHA/WHMIS criteria. May cause sensitization through skin contact.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood.

Chronic Effects: Hazardous by OSHA/WHMIS criteria. May cause chronic effects. Prolonged or repeated contact may dry skin and cause irritation. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust.

Prolonged or repeated exposure to Titanium dioxide may cause lung irritation, chest pain, and pulmonary edema. Repeated exposure to Silica (Quartz, SiO2) can cause silicosis, a form of lung scarring that can cause shortness of breath, reduced lung function, and in severe cases, death.

Carcinogenicity: May cause cancer. Respirable Silica (Quartz, SiO2) dust is classified as a human carcinogen.

Component Carcinogenicity

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Titanium dioxide	A4	Group 2B	Not listed.	OSHA Carcinogen.	Listed.
Quartz	A2	Group 1	List 1	OSHA Carcinogen.	Listed.

Mutagenicity: Not available.

Reproductive Effects: Not available.

Developmental Effects

Teratogenicity: Not available.

Embryotoxicity: Not available.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: Not regulated.

Class: Not applicable.

UN Number: Not applicable.

Packing Group: Not applicable.

Label Code: Not applicable.

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name:	Not regulated.
Class:	Not applicable.
UN Number:	Not applicable.
Packing Group:	Not applicable.
Label Code:	Not applicable.

ICAO/IATA

Proper Shipping Name:	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin), 9, PG III
Class:	9
UN Number:	UN3082
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

IMDG

Proper Shipping Name:	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin), 9, PG III
Class:	9
UN Number:	UN3082
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)
The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)
The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

United States
This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

No components are listed.

State Regulations
Massachusetts
US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Titanium dioxide	13463-67-7	Listed.
Quartz	14808-60-7	E

Note: E = Extraordinarily Hazardous Substance

New Jersey
US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Titanium dioxide	13463-67-7	Listed.
Quartz	14808-60-7	SHHS

Note: SHHS = Special Health Hazard Substance
Pennsylvania
US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Titanium dioxide	13463-67-7	Listed.
Quartz	14808-60-7	Listed.

California
California Prop 65:

WARNING This product can expose you to chemicals including Titanium dioxide, Quartz and Methanol, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Section 16: OTHER INFORMATION

Disclaimer:
The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. While Specialty Polymer Coatings, Inc. believes that the data contained herein are accurate and derived from qualified sources, the data are not to be taken as a warranty or representation for which Specialty Polymer Coatings, Inc. assumes legal responsibility. Any use of these data and information must be determined by the user to be in accordance with applicable governmental laws and regulations.

Date of Preparation of SDS:	March 6, 2019
Version:	1.8
GHS SDS Prepared by:	**Aegis Regulatory Inc.**
	Phone: (519) 488-0351

ABBREVIATIONS USED IN PREPARING THIS SDS

% (Percent)	< (Less than)	> (Greater than)	@ (at)

ACGIH	American Conference of Governmental Industrial Hygienists
ATE	Acute Toxicity Estimate
C	Celsius
CAS No.	CAS Registry Number
CANUTEC	Canadian Transport Emergency Centre
CEIL	Ceiling Limit
CEPA, 1999	Canadian Environmental Protection Act, 1999
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (U.S.)
DOT	Department of Transportation (U.S.)
F	Fahrenheit
g/kg	Grams per Kilogram
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
H	Hour
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
Kg	Kilogram
Lb/gal	Pounds per Gallon
LC_{50}	Lethal Concentration (50% Death)
LD_{50}	Lethal Dose (50% Death)
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
mg/m^3	Milligrams per Cubic Metre
ml/kg	Millilitres per Kilogram
mmHg	Millimetres of Mercury
mppcf	Millions of particles per Cubic Foot
MSHA	Mine Safety and Health Administration (U.S.)
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program (U.S.)
N.O.S.	Not Otherwise Specified
OSHA	Occupational Safety and Health Administration (U.S.)
PEL	Permissible Exposure Limit
PMCC	Pensky-Martens Closed Cup
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act (U.S.)
SARA	Superfund Amendments and Reauthorization Act, 1986 (U.S.)
SDS	Safety Data Sheet
SFCC	Setaflash Closed Cup Tester
STEL	Short-Term Exposure Limit
TDG	Transportation of Dangerous Goods Regulations (Canada)
TLV	Threshold Limit Value
TWA	Time-Weighted Average
TSCA	Toxic Substances Control Act
µL/kg	Micro Litre per Kilogram
WHMIS	Workplace Hazardous Materials Information System (Canada)

Section 1: IDENTIFICATION

Product Name:	SP-2888® R.G. Brush Hardener
Product Identifier:	PART "B" HARDENER
Product Code:	850-286
Detail:	Epoxy/Urethane. Blue.
Product Use:	Curing agent for SP-2888® R.G. Brush Base.
Restrictions on Use:	Not available.
Manufacturer/Supplier:	Specialty Polymer Coatings, Inc. 48 Bury Court Brantford, ON, N3S 0B1 Canada
24 Hour Emergency Phone:	In Canada, call CANUTEC: 1-613-996-6666 In USA, call CHEMTREC: 1-800-424-9300
Date of Preparation of SDS:	March 6, 2019

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification:
Skin Corrosion, Category 1B
Eye Damage, Category 1
Sensitization - Skin, Category 1
Toxic to Reproduction, Category 2
Specific Target Organ Toxicity (Single Exposure), Category 3 - Respiratory Irritation

LABEL ELEMENTS

Hazard Pictogram(s):

Signal Word: Danger

Hazard Statements:
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.
May cause respiratory irritation.

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist, vapours, or spray.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves, protective clothing, eye protection and face protection.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor.
Wash contaminated clothing before reuse.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: 10% of this product mixture consists of ingredient(s) of unknown acute toxicity.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

This material is considered hazardous by the Hazardous Products Regulations, 2015.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
1-Piperazineethanamine	N-(2-Aminoethyl)piperazine	140-31-8	15 - 20
Benzenemethanol	Benzyl alcohol	100-51-6	14 - 18
1,3-Benzenedimethanamine	Not available.	1477-55-0	10 - 15
Phenol, 4,4'-(1-methylethylidene)bis-	Bisphenol A	80-05-7	10 - 15
Phenol, 4-nonyl-, branched	Not available.	84852-15-3	7 - 10
1,2-Ethanediamine, N1-(2-aminoethyl)-	Diethylenetriamine	111-40-0	5 - 9
Phenol, 4-(1,1-dimethylethyl)-	p-tert-Butylphenol	98-54-4	5 - 9
Formaldehyde, polymer with 1,3-benzenedimethanamine and phenol	Not available.	57214-10-5	3 - 8
Benzenemethanamine, N,N-dimethyl-	N,N-Dimethylbenzylamine	103-83-3	1 - 5
1,2-Ethanediamine, N1-(2-aminoethyl)-, reaction products with bisphenol A diglycidyl ether homopolymer	Not available.	68411-71-2	1 - 2
Phenol, 2,4,6-tris[(dimethylamino)methyl]-	2,4,6-tris (dimethylaminomethyl)phenol	90-72-2	1 - 2
1-Propanamine, 3-(triethoxysilyl)-	3-(Triethoxysilyl)propylamine	919-30-2	1 - 2

Section 4: FIRST-AID MEASURES

Inhalation:

If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.

Eye Contact:

If in eyes: Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor.

Acute and delayed symptoms and effects: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Skin Contact:

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a poison center or doctor. Wash contaminated clothing before reuse.

Acute and delayed symptoms and effects: May cause an allergic skin reaction. Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Ingestion:

If swallowed: Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

General Advice:

In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians:

Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Combustible material: may burn but does not ignite readily. When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated. Runoff may pollute waterways.

If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.
Sensitivity to Static Discharge: This material is not sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Dry chemical, CO2 or water spray.

Large Fire: Dry chemical, CO2, alcohol-resistant foam or water spray. Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material.

Unsuitable Extinguishing Media: Not available.

Products of Combustion: Oxides of carbon. Oxides of nitrogen. Ammonia.

Protection of Firefighters: TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death. Contact with molten substance may cause severe burns to skin and eyes. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures: As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet). Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate enclosed areas. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Personal Precautions: Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protection recommended in Section 8.

Environmental Precautions: Prevent entry into waterways, sewers, basements or confined areas.

Methods for Containment: Stop leak if you can do it without risk.

Methods for Clean-Up:	Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
Other Information:	See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:
Do not swallow. Do not breathe mist, vapours, or spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. See Section 8 for information on Personal Protective Equipment.

Storage:
Store in a well-ventilated place. Keep container tightly closed. Store locked up. The acceptable shipping and storage temperature range is between 5 °C (41 °F) and 50 °C (122 °F). Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

N-(2-Aminoethyl)piperazine [CAS No. 140-31-8]
ACGIH: No TLV established.
OSHA: No PEL established.

Benzyl alcohol [CAS No. 100-51-6]
ACGIH: No TLV established.
OSHA: No PEL established.

1,3-Benzenedimethanamine [CAS No. 1477-55-0]
ACGIH: 0.1 mg/m³ (CEIL); Skin (1992)
OSHA: 0.1 mg/m³ (TWA); Skin [Vacated];

Bisphenol A [CAS No. 80-05-7]
ACGIH: No TLV established.
OSHA: No PEL established.

Phenol, 4-nonyl-, branched [CAS No. 84852-15-3]
ACGIH: No TLV established.
OSHA: No PEL established.

Diethylenetriamine [CAS No. 111-40-0]
ACGIH: 1 ppm (TWA); Skin (1985)
OSHA: 1 ppm (TWA) [Vacated];

p-tert-Butylphenol [CAS No. 98-54-4]
ACGIH: No TLV established.
OSHA: No PEL established.

Formaldehyde, polymer with 1,3-benzenedimethanamine and phenol [CAS No. 57214-10-5]
ACGIH: No TLV established.
OSHA: No PEL established.

N,N-Dimethylbenzylamine [CAS No. 103-83-3]
ACGIH: No TLV established.
OSHA: No PEL established.

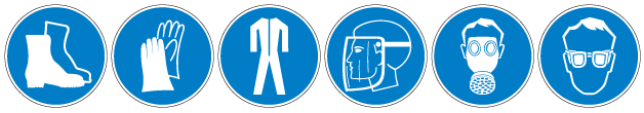
1,2-Ethanediamine, N1-(2-aminoethyl)-, reaction products with bisphenol A diglycidyl ether homopolymer [CAS No. 68411-71-2]
ACGIH: No TLV established.
OSHA: No PEL established.

2,4,6-tris(dimethylaminomethyl)phenol [CAS No. 90-72-2]
ACGIH: No TLV established.
OSHA: No PEL established.

3-(Triethoxysilyl)propylamine [CAS No. 919-30-2]
ACGIH: No TLV established.
OSHA: No PEL established.

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



Eye/Face Protection: Wear chemical safety glasses, goggles, and/or full face shield. Ensure that eyewash stations and safety showers are close to the workstation location. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection: Chemical resistant gloves with a long cuff that will overlap the clothing sleeves should be worn when handling this product. The glove/clothing overlaps should be sealed by tape. Check with the glove manufacturer to determine the proper glove type.

Skin and Body Protection: Long-sleeved protective clothing is to be worn over regular clothing to cover all exposed areas of arms, legs or torso during mixing and application of the coating. Breathable clothing, such as cotton or disposable coveralls, is recommended.

Respiratory Protection: Wear respiratory protection when handling product in confined spaces. If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, with organic vapour/acid gas cartridge and particulate filter, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Specialty Polymer Coatings, Inc. has consulted a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection. These measures are reflected in our comprehensive training of customer employees.

Other: A barrier cream may be used in conjunction with Personal Protective Equipment as an additional safeguard against skin contact.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Blue liquid.
Colour:	Blue.
Odour:	Ammonia.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH:	Not available.
Melting Point / Freezing Point:	Not available.
Initial Boiling Point:	> 107 °C (224.6 °F)
Boiling Range:	Not available.
Flash Point:	> 93.3 °C (199.94 °F) (PMCC)
Evaporation Rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapour Pressure:	5.5 mmHg at 21 °C (69.8 °F)
Vapour Density:	Not available.
Relative Density:	1.05 (Water = 1) at 25 °C (77 °F)
Solubilities:	Slightly soluble in water (0.1 to 1.0%) at 20 °C (68 °F).
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	Not available.

Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.
Density:	Not available.
Coefficient of Water/Oil Distribution:	Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability:	Stable under normal storage conditions.
Possibility of Hazardous Reactions:	Product slowly corrodes copper, aluminum, zinc, and galvanized surfaces.
Conditions to Avoid:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials:	Acids. Bases. Oxidizers.
Hazardous Decomposition Products:	Oxides of carbon. Oxides of nitrogen.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral:	Not available.
Dermal:	Not available.
Inhalation:	Not available.

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
N-(2-Aminoethyl) piperazine	140-31-8	2140 µL/kg (rat)	880 µL/kg (rabbit)	Not available.
Benzyl alcohol	100-51-6	1040 mg/kg (rabbit)	2000 mg/kg (rabbit)	Not available.
1,3-Benzenedimethanamine	1477-55-0	930 mg/kg (rat)	2000 mg/kg (rabbit)	700 ppm (rat); 1H
Bisphenol A	80-05-7	2230 mg/kg (rabbit)	3000 µL/kg (rabbit)	Not available.
Phenol, 4-nonyl-, branched	84852-15-3	1300 mg/kg (rat)	Not available.	Not available.
Diethylenetriamine	111-40-0	1080 mg/kg (rat)	1090 mg/kg (rabbit)	Not available.
p-tert-Butylphenol	98-54-4	1500 mg/kg (mammal)	1580 mg/kg (mammal)	Not available.

Formaldehyde, polymer with 1,3- benzenedimethanamine and phenol	57214-10-5	Not available.	Not available.	Not available.
N,N-Dimethylbenzylamine	103-83-3	265 mg/kg (rat)	1660 mg/kg (rabbit)	Not available.
1,2-Ethanediamine, N1-(2-aminoethyl)-, reaction products with bisphenol A diglycidyl ether homopolymer	68411-71-2	Not available.	Not available.	Not available.
2,4,6-tris(dimethylaminomethyl) phenol	90-72-2	1200 mg/kg (rat)	1280 mg/kg (rat)	Not available.
3-(Triethoxysilyl)propylamine	919-30-2	1780 mg/kg (rat)	4000 mL/kg (rabbit)	Not available.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion. Skin absorption.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Liver. Kidneys. Central nervous system.

Symptoms (including delayed and immediate effects)

Inhalation: May cause respiratory irritation. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.

Eye: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Skin: May cause an allergic skin reaction. Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Ingestion: Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

Skin Sensitization: Hazardous by OSHA/WHMIS criteria. May cause sensitisation through skin contact.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Liver. Kidneys. Reproductive system. Central nervous system.

Chronic Effects: Prolonged or repeated contact may dry skin and cause irritation.

Carcinogenicity: This product does not contain any carcinogens or potential carcinogens as listed by ACGIH, IARC, OSHA, or NTP.

Mutagenicity: Not available.

Reproductive Effects: Suspected of damaging fertility or the unborn child.

Developmental Effects
Teratogenicity: Not available.

Embryotoxicity: Possible risk of harm to the unborn child.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (Aminoethylpiperazine, Diethylenetriamine), 8, PG III

Class: 8

UN Number: UN2735

Packing Group: III

Label Code:

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name: UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (Aminoethylpiperazine, Diethylenetriamine), 8, PG III

Class: 8

UN Number: UN2735

Packing Group: III

Label Code:

ICAO/IATA

Proper Shipping Name:	UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (Aminoethylpiperazine, Diethylenetriamine), 8, PG III
Class:	8
UN Number:	UN2735
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

IMDG

Proper Shipping Name:	UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (Aminoethylpiperazine, Diethylenetriamine), 8, PG III
Class:	8
UN Number:	UN2735
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)
The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)
The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

United States
This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Bisphenol A	Not listed.	Not listed.	Not listed.	313	Not listed.	Not listed.

Phenol, 4-nonyl-, branched	Not listed.	Not listed.	Not listed.	313$	Not listed.	Not listed.

State Regulations

Massachusetts

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
N-(2-Aminoethyl)piperazine	140-31-8	Listed.
Benzyl alcohol	100-51-6	Listed.
1,3-Benzenedimethanamine	1477-55-0	Listed.
Bisphenol A	80-05-7	Listed.
Phenol, 4-nonyl-, branched	84852-15-3	Listed.
Diethylenetriamine	111-40-0	Listed.

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
N-(2-Aminoethyl)piperazine	140-31-8	SHHS
1,3-Benzenedimethanamine	1477-55-0	Listed.
Bisphenol A	80-05-7	Listed.
Diethylenetriamine	111-40-0	SHHS
N,N-Dimethylbenzylamine	103-83-3	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
N-(2-Aminoethyl)piperazine	140-31-8	Listed.
Benzyl alcohol	100-51-6	Listed.
1,3-Benzenedimethanamine	1477-55-0	Listed.
Bisphenol A	80-05-7	E
Phenol, 4-nonyl-, branched	84852-15-3	Listed.
Diethylenetriamine	111-40-0	Listed.
2,4,6-tris(dimethylaminomethyl)phenol	90-72-2	Listed.

Note: E = Environmental Hazard

California

California Prop 65:

WARNING This product can expose you to chemicals including Bisphenol A, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Section 16: OTHER INFORMATION

Disclaimer:
The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. While Specialty Polymer Coatings, Inc. believes that the data contained herein are accurate and derived from qualified sources, the data are not to be taken as a warranty or representation for which Specialty Polymer Coatings, Inc. assumes legal responsibility. Any use of these data and information must be determined by the user to be in accordance with applicable governmental laws and regulations.

Date of Preparation of SDS:	March 6, 2019
Version:	1.9
GHS SDS Prepared by:	**Aegis Regulatory Inc.**
	Phone: (519) 488-0351

ABBREVIATIONS USED IN PREPARING THIS SDS

% (Percent)	< (Less than) > (Greater than) @ (at)
ACGIH	American Conference of Governmental Industrial Hygienists
ATE	Acute Toxicity Estimate
C	Celsius
CAS No.	CAS Registry Number
CANUTEC	Canadian Transport Emergency Centre
CEIL	Ceiling Limit
CEPA, 1999	Canadian Environmental Protection Act, 1999
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (U.S.)
DOT	Department of Transportation (U.S.)
F	Fahrenheit
g/kg	Grams per Kilogram
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
H	Hour
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
Kg	Kilogram
Lb/gal	Pounds per Gallon
LC_{50}	Lethal Concentration (50% Death)
LD_{50}	Lethal Dose (50% Death)
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
mg/m^3	Milligrams per Cubic Metre
ml/kg	Millilitres per Kilogram
mmHg	Millimetres of Mercury
mppcf	Millions of particles per Cubic Foot
MSHA	Mine Safety and Health Administration (U.S.)
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program (U.S.)
N.O.S.	Not Otherwise Specified
OSHA	Occupational Safety and Health Administration (U.S.)
PEL	Permissible Exposure Limit
PMCC	Pensky-Martens Closed Cup
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act (U.S.)
SARA	Superfund Amendments and Reauthorization Act, 1986 (U.S.)
SDS	Safety Data Sheet
SFCC	Setaflash Closed Cup Tester
STEL	Short-Term Exposure Limit
TDG	Transportation of Dangerous Goods Regulations (Canada)
TLV	Threshold Limit Value
TWA	Time-Weighted Average
TSCA	Toxic Substances Control Act
µL/kg	Micro Litre per Kilogram
WHMIS	Workplace Hazardous Materials Information System (Canada)

Section 1: IDENTIFICATION

Product Name:	SP-2888® R.G. Cartridge Base
Product Identifier:	PART “A” BASE
Product Code:	850-300
Detail:	Epoxy/Urethane. White.
Product Use:	Exterior coating for pipelines.
Restrictions on Use:	Not available.
Manufacturer/Supplier:	Specialty Polymer Coatings, Inc. 101 - 20529 - 62nd Avenue Langley, BC, V3A 8R4 Canada
24 Hour Emergency Phone:	In Canada, call CANUTEC: 1-613-996-6666 In USA, call CHEMTREC: 1-800-424-9300
Date of Preparation of SDS:	March 24, 2017

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification:
Skin Irritation, Category 2
Eye Irritation, Category 2A
Sensitization - Skin, Category 1
Carcinogenicity, Category 1A
Specific Target Organ Toxicity (Repeated Exposure), Category 1

LABEL ELEMENTS

Hazard Pictogram(s):

Signal Word: Danger

Hazard Statements:
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
May cause cancer.
Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust, mist, vapours, or spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves, protective clothing and eye protection.

Response:
IF ON SKIN: Wash with plenty of water.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
Get medical advice/attention if you feel unwell.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

Storage: Store locked up.

Disposal: Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: 66.5% of this product mixture consists of ingredient(s) of unknown acute toxicity.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

This material is considered hazardous by the Hazardous Products Regulations, 2015.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Oxirane, 2,2'-((1-methylethylidene)bis(4,1-phenyleneoxymethylene))bis-, homopolymer	Not available.	25085-99-8	40 - 47
Titanium oxide (TiO2)	Not available.	13463-67-7	5 - 8
Phenol, polymer with formaldehyde, glycidyl ether	Not available.	28064-14-4	5 - 7
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane	Bisphenol A epichlorohydrin polymer	25068-38-6	5 - 6
Oxirane, 2,2'-[(2,2-dimethyl-1,3-propanediyl)bis(oxymethylene)]bis-	Neopentyl glycol diglycidyl ether	17557-23-2	3 - 6
Quartz (SiO2)	Quartz	14808-60-7	1 - 4
Oxirane, 2,2'-[1,4-cyclohexanediylbis (methyleneoxymethylene)]bis-	1,4-Bis(glycidyloxymethyl) cyclohexane	14228-73-0	1 - 2.5
Poly(oxy(methyl-1,2-ethanediyl)), alpha,alpha',alpha''-1,2,3-propanetriyltris(omega-(2-oxiranylmethoxy)-	Not available.	37237-76-6	1 - 2

Section 4: FIRST-AID MEASURES

Inhalation:

If inhaled: Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Inhalation of Titanium dioxide may cause blood changes. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO2) dust has occurred. Coughing and irritation of throat are early symptoms.

Eye Contact:

If in eyes: Rinse cautiously with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Acute and delayed symptoms and effects: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin Contact:

If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

Acute and delayed symptoms and effects: May cause an allergic skin reaction. Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion:

If swallowed: Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Ingestion of Titanium dioxide may cause ataxia (failure of muscular coordination), increased blood pressure, hallucinations, hypermotility, muscle contraction/spasticity, fatigue, psychosis, and tremors.

General Advice:

In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians:

Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Not flammable or combustible by OSHA/WHMIS criteria.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.

Sensitivity to Static Discharge: This material is not sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media:	Small Fire: Dry chemical, CO_2, water spray or regular foam. Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.
Unsuitable Extinguishing Media:	Not available.
Products of Combustion:	Oxides of carbon. Aldehydes. Hydrogen chloride. Chlorine.
Protection of Firefighters:	Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures:	Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
Personal Precautions:	Do not touch or walk through spilled material. Use personal protection recommended in Section 8.
Environmental Precautions:	Keep out of drains, sewers, ditches, and waterways.
Methods for Containment:	Stop leak if without risk. Do not flush to sewer or allow to enter waterways.
Methods for Clean-Up:	Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
Other Information:	See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:
Do not swallow. Do not breathe dust, mist, vapours, or spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. See Section 8 for information on Personal Protective Equipment.

Storage:
Store locked up. The acceptable shipping and storage temperature range is between 5 °C (41°F) and 50 °C (122 °F). Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

Oxirane, 2,2'-((1-methylethylidene)bis(4,1-phenyleneoxymethylene))bis-, homopolymer [CAS No. 25085-99-8]
ACGIH: No TLV established.
OSHA: No PEL established.

Titanium dioxide [CAS No. 13463-67-7]
ACGIH: 10 mg/m³ (TWA); A4 (1992)
OSHA: 15 mg/m³ (Total dust) (TWA);
10 mg/m³ (TWA) (Total dust) [Vacated];

Phenol, polymer with formaldehyde, glycidyl ether [CAS No. 28064-14-4]
ACGIH: No TLV established.
OSHA: No PEL established.

Bisphenol A epichlorohydrin polymer [CAS No. 25068-38-6]
ACGIH: No TLV established.
OSHA: No PEL established.

Neopentyl glycol diglycidyl ether [CAS No. 17557-23-2]
ACGIH: No TLV established.
OSHA: No PEL established.

Quartz [CAS No. 14808-60-7]
ACGIH: 0.025 mg/m³ (TWA); A2; Respirable fraction (2009)
OSHA: 30 / (%SiO2 + 2) mg/m³ Quartz (Total dust) (TWA), 10 / (%SiO2 + 2) mg/m³ Quartz (Respirable) & 250 / (%SiO2 + 5) mppcf Quartz (Respirable) (TWA); See Table Z3.
0.1 mg/m³ (As respirable quartz) (TWA) [Vacated];

1,4-Bis(glycidyloxymethyl)cyclohexane [CAS No. 14228-73-0]
ACGIH: No TLV established.
OSHA: No PEL established.

Poly(oxy(methyl-1,2-ethanediyl)), alpha,alpha',alpha''-1,2,3-propanetriyltris(omega-(2-oxiranylmethoxy)- [CAS No. 37237-76-6]
ACGIH: No TLV established.
OSHA: No PEL established.

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye/Face Protection: Wear chemical safety glasses, goggles, and/or full face shield. Ensure that eyewash stations and safety showers are close to the workstation location, where possible. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection: Chemical resistant gloves with a long cuff that will overlap the clothing sleeves should be worn when handling this product. The glove/clothing overlaps should be sealed by tape. Check with the glove manufacturer to determine the proper glove type.

Skin and Body Protection: Long-sleeved protective clothing is to be worn over regular clothing to cover all exposed areas of arms, legs or torso during mixing and application of the coating. Breathable clothing, such as cotton or disposable coveralls, is recommended.

Respiratory Protection: If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators. Wear a dust respirator for any activity such as sanding or grinding of cured coating.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Specialty Polymer Coatings, Inc. has consulted a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection. These measures are reflected in our comprehensive training of customer employees.

Other: A barrier cream may be used in conjunction with Personal Protective Equipment as an additional safeguard against skin contact.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	White viscous liquid.
Colour:	White.
Odour:	Odourless.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH:	Not available.
Melting Point / Freezing Point:	Not available.
Initial Boiling Point:	Not available.
Boiling Range:	> 300 °C (572 °F)
Flash Point:	> 100 °C (212 °F) (SFCC)
Evaporation Rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapour Pressure:	Not available.
Vapour Density:	Not available.
Relative Density:	1.41 (Water = 1) at 25 °C (77 °F)
Solubilities:	Negligible solubility in water at 20 °C (68 °F).
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	Not available.
Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.
Density:	Not available.
Coefficient of Water/Oil Distribution:	Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity: Contact with incompatible materials. Sources of ignition. Exposure to heat.

Chemical Stability: Stable under normal storage conditions.

Possibility of Hazardous Reactions: None known.

Conditions to Avoid: Contact with incompatible materials. Sources of ignition. Exposure to heat.

Incompatible Materials: Acids. Bases. Strong oxidizers. Hydrofluoric acid. Fluorine containing compounds. Amines. Sulfuric acid. Dichromate.

Hazardous Decomposition Products: Not available.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral: Not available.

Dermal: Not available.

Inhalation: Not available.

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
Oxirane, 2,2'-((1-methylethylidene) bis(4,1-phenyleneoxymethylene)) bis-, homopolymer	25085-99-8	Not available.	Not available.	Not available.
Titanium dioxide	13463-67-7	Not available.	Not available.	Not available.
Phenol, polymer with formaldehyde, glycidyl ether	28064-14-4	Not available.	Not available.	Not available.
Bisphenol A epichlorohydrin polymer	25068-38-6	11400 mg/kg (rat)	> 1200 mg/kg (rat)	Not available.
Neopentyl glycol diglycidyl ether	17557-23-2	4500 mg/kg (rat)	Not available.	Not available.
Quartz	14808-60-7	Not available.	Not available.	0.3 mg/m³ (human); 10Y
1,4-Bis(glycidyloxymethyl)-cyclohexane	14228-73-0	Not available.	Not available.	Not available.
Poly(oxy(methyl-1,2-ethanediyl)), alpha,alpha',alpha''-1,2,3-propanetriyltris(omega-(2-oxiranylmethoxy)-	37237-76-6	Not available.	Not available.	Not available.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs.

Symptoms (including delayed and immediate effects)

Inhalation: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Inhalation of Titanium dioxide may cause blood changes. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO2) dust has occurred. Coughing and irritation of throat are early symptoms.

Eye: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin: May cause an allergic skin reaction. Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Ingestion of Titanium dioxide may cause ataxia (failure of muscular coordination), increased blood pressure, hallucinations, hypermotility, muscle contraction/spasticity, fatigue, psychosis, and tremors.

Skin Sensitization: Hazardous by OSHA/WHMIS criteria. May cause sensitisation through skin contact.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood. Body weight.

Chronic Effects: Hazardous by OSHA/WHMIS criteria. May cause chronic effects. Prolonged or repeated contact may dry skin and cause irritation. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Prolonged or repeated exposure to Titanium dioxide may cause lung irritation, chest pain, and pulmonary edema. Repeated exposure to Silica (Quartz, SiO2) can cause silicosis, a form of lung scarring that can cause shortness of breath, reduced lung function, and in severe cases, death.

Carcinogenicity: May cause cancer. Respirable Silica (Quartz, SiO2) dust is classified as a human carcinogen.

Component Carcinogenicity

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Titanium dioxide	A4	Group 2B	Not listed.	OSHA Carcinogen.	Listed.
Quartz	A2	Group 1	List 1	OSHA Carcinogen.	Listed.

Mutagenicity: Not available.

Reproductive Effects: Not available.

Developmental Effects

Teratogenicity: Not available.

Embryotoxicity: Not available.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name:	Not regulated.
Class:	Not applicable.
UN Number:	Not applicable.
Packing Group:	Not applicable.
Label Code:	Not applicable.

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name:	Not regulated.
Class:	Not applicable.
UN Number:	Not applicable.
Packing Group:	Not applicable.
Label Code:	Not applicable.

ICAO/IATA

Proper Shipping Name:	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin), 9, PG III
Class:	9
UN Number:	UN3082
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

IMDG

Proper Shipping Name:	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin), 9, PG III
Class:	9
UN Number:	UN3082
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

Section 15: REGULATORY INFORMATION

Federal Regulations

United States
This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

No components are listed.

State Regulations

Massachusetts
US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Titanium dioxide	13463-67-7	Listed.
Quartz	14808-60-7	E

Note: E = Extraordinarily Hazardous Substance

New Jersey
US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Titanium dioxide	13463-67-7	Listed.
Quartz	14808-60-7	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania
US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Titanium dioxide	13463-67-7	Listed.
Quartz	14808-60-7	Listed.

California
California Prop 65: WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Component	Type of Toxicity
Titanium dioxide	cancer
Quartz	cancer
Toluene	developmental

Section 16: OTHER INFORMATION

Disclaimer:
The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. While Specialty Polymer Coatings, Inc. believes that the data contained herein are accurate and derived from qualified sources, the data are not to be taken as a warranty or representation for which Specialty Polymer Coatings, Inc. assumes legal responsibility. Any use of these data and information must be determined by the user to be in accordance with applicable governmental laws and regulations.

Date of Preparation of SDS:	March 24, 2017
Version:	1.3
GHS SDS Prepared by:	**Aegis Regulatory Inc.**
	Phone: (519) 488-0351
	www.aegisreg.com

ABBREVIATIONS USED IN PREPARING THIS SDS

% (Percent)	< (Less than) > (Greater than) @ (at)
ACGIH	American Conference of Governmental Industrial Hygienists
ATE	Acute Toxicity Estimate
C	Celsius
CAS No.	CAS Registry Number
CANUTEC	Canadian Transport Emergency Centre
CEIL	Ceiling Limit
CEPA, 1999	Canadian Environmental Protection Act, 1999
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (U.S.)
DOT	Department of Transportation (U.S.)
F	Fahrenheit
g/kg	Grams per Kilogram
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
H	Hour
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
Kg	Kilogram
Lb/gal	Pounds per Gallon
LC_{50}	Lethal Concentration (50% Death)
LD_{50}	Lethal Dose (50% Death)
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
mg/m^3	Milligrams per Cubic Metre
ml/kg	Millilitres per Kilogram
mmHg	Millimetres of Mercury
mppcf	Millions of particles per Cubic Foot
MSHA	Mine Safety and Health Administration (U.S.)
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program (U.S.)
N.O.S.	Not Otherwise Specified
OSHA	Occupational Safety and Health Administration (U.S.)
PEL	Permissible Exposure Limit
PMCC	Pensky-Martens Closed Cup
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act (U.S.)
SARA	Superfund Amendments and Reauthorization Act, 1986 (U.S.)
SDS	Safety Data Sheet
SFCC	Setaflash Closed Cup Tester
STEL	Short-Term Exposure Limit
TDG	Transportation of Dangerous Goods Regulations (Canada)
TLV	Threshold Limit Value
TWA	Time-Weighted Average
TSCA	Toxic Substances Control Act
µL/kg	Micro Litre per Kilogram
WHMIS	Workplace Hazardous Materials Information System (Canada)

SPECIALTY POLYMER COATINGS

SAFETY DATA SHEET

SP-2888® R.G. Cartridge Hardener
Date of Preparation: March 24, 2017

Section 1: IDENTIFICATION

Product Name:	SP-2888® R.G. Cartridge Hardener
Product Identifier:	PART “B” HARDENER.
Product Code:	850-301
Detail:	Epoxy/Urethane. Blue
Product Use:	Curing agent for SP-2888® R.G. Cartridge Base.
Restrictions on Use:	Not available.
Manufacturer/Supplier:	Specialty Polymer Coatings, Inc. 101 - 20529 - 62nd Avenue Langley, BC, V3A 8R4 Canada
24 Hour Emergency Phone:	In Canada, call CANUTEC: 1-613-996-6666 In USA, call CHEMTREC: 1-800-424-9300
Date of Preparation of SDS:	March 24, 2017

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification:
Acute Toxicity - Oral, Category 4
Acute Toxicity - Dermal, Category 4
Acute Toxicity - Inhalation, Category 4
Skin Corrosion, Category 1B
Eye Damage, Category 1
Sensitization - Skin, Category 1
Carcinogenicity, Category 1A
Toxic to Reproduction, Category 2
Specific Target Organ Toxicity (Repeated Exposure), Category 1

LABEL ELEMENTS

Hazard Pictogram(s):

Signal Word: Danger

Hazard Statements:
Harmful if swallowed.
Harmful in contact with skin.
Harmful if inhaled.
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
May cause cancer.
Suspected of damaging fertility or the unborn child.
Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.

Do not breathe mist, vapours, or spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves, protective clothing, eye protection and face protection.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If exposed or concerned: Get medical advice/attention.
Immediately call a POISON CENTER or doctor.
Rinse mouth.
If skin irritation or rash occurs: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.
Wash contaminated clothing before reuse.

Storage: Store locked up.

Disposal: Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: None.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

This material is considered hazardous by the Hazardous Products Regulations, 2015.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Benzenemethanol	Benzyl alcohol	100-51-6	8 - 11
1-Piperazineethanamine	N-(2-Aminoethyl)piperazine	140-31-8	7 - 10
1,3-Benzenedimethanamine	Not available.	1477-55-0	6 - 9
Phenol, 4,4'-(1-methylethylidene)bis-	Bisphenol A	80-05-7	5 - 8
Quartz (SiO2)	Not available.	14808-60-7	4 - 7
Phenol, 4-nonyl-, branched	Not available.	84852-15-3	3 - 6
Phenol, 4-(1,1-dimethylethyl)-	p-tert-Butylphenol	98-54-4	3 - 5
1,2-Ethanediamine, N1-(2-aminoethyl)-	Diethylenetriamine	111-40-0	1 - 4
Benzenemethanamine, N,N-dimethyl-	N,N-Dimethylbenzylamine	103-83-3	1 - 3
1-Propanamine, 3-(triethoxysilyl)-	3-(Triethoxysilyl) propylamine	919-30-2	<1

Section 4: FIRST-AID MEASURES

Inhalation:

If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: Harmful if inhaled. May cause respiratory irritation. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO2) dust has occurred. Coughing and irritation of throat are early symptoms.

Eye Contact:

If in eyes: Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor.

Acute and delayed symptoms and effects: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Skin Contact:

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a poison center or doctor. Wash contaminated clothing before reuse.

Acute and delayed symptoms and effects: Harmful in contact with skin. May cause an allergic skin reaction. Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Ingestion:

If swallowed: Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: Harmful if swallowed. Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

General Advice:

In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians:

Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Combustible material: may burn but does not ignite readily. When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.

Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated. Runoff may pollute waterways.

If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire.

Sensitivity to Mechanical Impact:	This material is not sensitive to mechanical impact.
Sensitivity to Static Discharge:	This material is not sensitive to static discharge.

MEANS OF EXTINCTION

Suitable Extinguishing Media:	Small Fire: Dry chemical, CO_2 or water spray. Large Fire: Dry chemical, CO_2, alcohol-resistant foam or water spray. Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material.
Unsuitable Extinguishing Media:	Not available.
Products of Combustion:	Oxides of carbon. Oxides of nitrogen. Ammonia. Nitrogen.
Protection of Firefighters:	TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death. Contact with molten substance may cause severe burns to skin and eyes. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures:	As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet). Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate enclosed areas. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
Personal Precautions:	Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protection recommended in Section 8.

Environmental Precautions:	Prevent entry into waterways, sewers, basements or confined areas.
Methods for Containment:	Stop leak if you can do it without risk.
Methods for Clean-Up:	Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.
Other Information:	See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:
Do not swallow. Do not breathe mist, vapours, or spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. See Section 8 for information on Personal Protective Equipment.

Storage:
Store locked up. The acceptable shipping and storage temperature range is between 5 °C (41°F) and 50 °C (122 °F). Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

Benzyl alcohol [CAS No. 100-51-6]
ACGIH: No TLV established.
OSHA: No PEL established.

N-(2-Aminoethyl)piperazine [CAS No. 140-31-8]
ACGIH: No TLV established.
OSHA: No PEL established.

1,3-Benzenedimethanamine [CAS No. 1477-55-0]
ACGIH: 0.1 mg/m³ (CEIL); Skin (1992)
OSHA: 0.1 mg/m³ (TWA); Skin [Vacated];

Bisphenol A [CAS No. 80-05-7]
ACGIH: No TLV established.
OSHA: No PEL established.

Quartz [CAS No. 14808-60-7]
ACGIH: 0.025 mg/m³ (TWA); A2; Respirable fraction (2009)
OSHA: 30 / (%SiO2 + 2) mg/m³ Quartz (Total dust) (TWA), 10 / (%SiO2 + 2) mg/m³ Quartz (Respirable) & 250 / (%SiO2 + 5) mppcf Quartz (Respirable) (TWA); See Table Z3. 0.1 mg/m³ (As respirable quartz) (TWA) [Vacated];

Phenol, 4-nonyl-, branched [CAS No. 84852-15-3]
ACGIH: No TLV established.
OSHA: No PEL established.

p-tert-Butylphenol [CAS No. 98-54-4]
ACGIH: No TLV established.
OSHA: No PEL established.

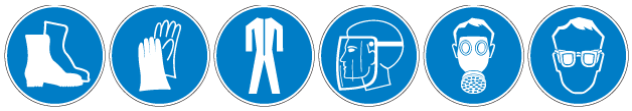
Diethylenetriamine [CAS No. 111-40-0]
ACGIH: 1 ppm (TWA); Skin (1985)
OSHA: 1 ppm (TWA) [Vacated];

N,N-Dimethylbenzylamine [CAS No. 103-83-3]
ACGIH: No TLV established.
OSHA: No PEL established.

3-(Triethoxysilyl)propylamine [CAS No. 919-30-2]
ACGIH: No TLV established.
OSHA: No PEL established.

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



Eye/Face Protection: Wear chemical safety glasses, goggles, and/or full face shield. Ensure that eyewash stations and safety showers are close to the workstation location, where possible. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR1910.133 for Personal Protective Equipment.

Hand Protection: Chemical resistant gloves with a long cuff that will overlap the clothing sleeves should be worn when handling this product. The glove/clothing overlaps should be sealed by tape. Check with the glove manufacturer to determine the proper glove type.

Skin and Body Protection: Long-sleeved protective clothing is to be worn over regular clothing to cover all exposed areas of arms, legs or torso during mixing and application of the coating. Breathable clothing, such as cotton or disposable coveralls, is recommended.

Respiratory Protection: If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, with organic vapour/acid gas cartridge and particulate filter, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Specialty Polymer Coatings, Inc. has consulted a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection. These measures are reflected in our comprehensive training of customer employees.

Other: A barrier cream may be used in conjunction with Personal Protective Equipment as an additional safeguard against skin contact.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Blue liquid.
Colour:	Blue.
Odour:	Ammonia.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH:	Not available.
Melting Point / Freezing Point:	Not available.
Initial Boiling Point:	Not available.
Boiling Range:	> 107 °C (224.6 °F)
Flash Point:	> 93.3 °C (199.94 °F) (PMCC)
Evaporation Rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapour Pressure:	Not available.
Vapour Density:	Not available.
Relative Density:	1.50 (Water = 1) at 25 °C (77 °F)
Solubilities:	Slightly soluble in water at 20 °C (68 °F) (0.1 to 1%).
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	Not available.
Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.

Density:	Not available.
Coefficient of Water/Oil Distribution:	Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability:	Stable under normal storage conditions.
Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials:	Acids. Bases. Strong oxidizers. Hydrofluoric acid. Fluorine containing compounds. Acid chlorides. Aldehydes. Acid anhydrides.

Hazardous Decomposition Products: Not available.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral:	Not available.
Dermal:	Not available.
Inhalation:	Not available.

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
Benzyl alcohol	100-51-6	1040 mg/kg (rabbit)	2000 mg/kg (rabbit)	Not available.
N-(2-Aminoethyl)piperazine	140-31-8	2140 µL/kg (rat)	880 µL/kg (rabbit)	Not available.
1,3-Benzenedimethanamine	1477-55-0	930 mg/kg (rat)	2000 mg/kg (rabbit)	700 ppm (rat); 1H
Bisphenol A	80-05-7	2230 mg/kg (rabbit)	3000 µL/kg (rabbit)	Not available.
Quartz	14808-60-7	Not available.	Not available.	0.3 mg/m³ (human); 10Y
Phenol, 4-nonyl-, branched	84852-15-3	1300 mg/kg (rat)	Not available.	Not available.
p-tert-Butylphenol	98-54-4	1500 mg/kg (mammal)	1580 mg/kg (mammal)	Not available.
Diethylenetriamine	111-40-0	1080 mg/kg (rat)	1090 mg/kg (rabbit)	Not available.
N,N-Dimethylbenzylamine	103-83-3	265 mg/kg (rat)	1660 mg/kg (rabbit)	Not available.
3-(Triethoxysilyl)propylamine	919-30-2	1780 mg/kg (rat)	4000 mL/kg (rabbit)	Not available.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion. Skin absorption.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Liver. Kidneys. Central nervous system.

Symptoms (including delayed and immediate effects)

Inhalation: Harmful if inhaled. May cause respiratory irritation. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO2) dust has occurred. Coughing and irritation of throat are early symptoms.

Eye: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Skin: Harmful in contact with skin. May cause an allergic skin reaction. Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Ingestion: Harmful if swallowed. Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

Skin Sensitization: Hazardous by OSHA/WHMIS criteria. May cause sensitisation through skin contact.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Liver. Kidneys. Reproductive system. Central nervous system.

Chronic Effects: Hazardous by OSHA/WHMIS criteria. May cause chronic effects. Prolonged or repeated contact may dry skin and cause irritation. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Repeated exposure to Silica (Quartz, SiO2) can cause silicosis, a form of lung scarring that can cause shortness of breath, reduced lung function, and in severe cases, death.

Carcinogenicity: May cause cancer. Respirable Silica (Quartz, SiO2) dust is classified as a human carcinogen.

Component Carcinogenicity

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Quartz	A2	Group 1	List 1	OSHA Carcinogen.	Listed.

Mutagenicity: Not available.

Reproductive Effects: Suspected of damaging fertility or the unborn child.

Developmental Effects
Teratogenicity: Not available.

Embryotoxicity: Possible risk of harm to the unborn child.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (Aminoethylpiperazine, Diethylenetriamine), 8, PG III

Class: 8

UN Number: UN2735

Packing Group: III

Label Code:

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name: UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (Aminoethylpiperazine, Diethylenetriamine), 8, PG III

Class: 8

UN Number: UN2735

Packing Group: III

Label Code:

ICAO/IATA

Proper Shipping Name:	UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (Aminoethylpiperazine, Diethylenetriamine), 8, PG III
Class:	8
UN Number:	UN2735
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

IMDG

Proper Shipping Name:	UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (Aminoethylpiperazine, Diethylenetriamine), 8, PG III
Class:	8
UN Number:	UN2735
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)
The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)
The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

United States
This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Bisphenol A	Not listed.	Not listed.	Not listed.	313	Not listed.	Not listed.
Phenol, 4-nonyl-, branched	Not listed.	Not listed.	Not listed.	313$	Not listed.	Not listed.

State Regulations

Massachusetts

US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Benzyl alcohol	100-51-6	Listed.
N-(2-Aminoethyl)piperazine	140-31-8	Listed.
1,3-Benzenedimethanamine	1477-55-0	Listed.
Bisphenol A	80-05-7	Listed.
Quartz	14808-60-7	E
Diethylenetriamine	111-40-0	Listed.

Note: E = Extraordinarily Hazardous Substance

New Jersey

US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
N-(2-Aminoethyl)piperazine	140-31-8	SHHS
1,3-Benzenedimethanamine	1477-55-0	Listed.
Bisphenol A	80-05-7	Listed.
Quartz	14808-60-7	SHHS
Diethylenetriamine	111-40-0	SHHS
N,N-Dimethylbenzylamine	103-83-3	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania

US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Benzyl alcohol	100-51-6	Listed.
N-(2-Aminoethyl)piperazine	140-31-8	Listed.
1,3-Benzenedimethanamine	1477-55-0	Listed.
Bisphenol A	80-05-7	E
Quartz	14808-60-7	Listed.
Diethylenetriamine	111-40-0	Listed.

Note: E = Environmental Hazard

California
California Prop 65: WARNING: This product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

Component	Type of Toxicity
Bisphenol A	female
Quartz	cancer

Section 16: OTHER INFORMATION

Disclaimer:
The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. While Specialty Polymer Coatings, Inc. believes that the data contained herein are accurate and derived from qualified sources, the data are not to be taken as a warranty or representation for which Specialty Polymer Coatings, Inc. assumes legal responsibility. Any use of these data and information must be determined by the user to be in accordance with applicable governmental laws and regulations.

Date of Preparation of SDS: March 24, 2017

Version: 1.5

GHS SDS Prepared by: **Aegis Regulatory Inc.**

Phone: (519) 488-0351

www.aegisreg.com

ABBREVIATIONS USED IN PREPARING THIS SDS

% (Percent)	< (Less than)	> (Greater than)	@ (at)

ACGIH	American Conference of Governmental Industrial Hygienists
ATE	Acute Toxicity Estimate
C	Celsius
CAS No.	CAS Registry Number
CANUTEC	Canadian Transport Emergency Centre
CEIL	Ceiling Limit
CEPA, 1999	Canadian Environmental Protection Act, 1999
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (U.S.)
DOT	Department of Transportation (U.S.)
F	Fahrenheit
g/kg	Grams per Kilogram
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
H	Hour
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
Kg	Kilogram
Lb/gal	Pounds per Gallon
LC_{50}	Lethal Concentration (50% Death)
LD_{50}	Lethal Dose (50% Death)
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
mg/m^3	Milligrams per Cubic Metre
ml/kg	Millilitres per Kilogram
mmHg	Millimetres of Mercury
mppcf	Millions of particles per Cubic Foot
MSHA	Mine Safety and Health Administration (U.S.)
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program (U.S.)
N.O.S.	Not Otherwise Specified
OSHA	Occupational Safety and Health Administration (U.S.)
PEL	Permissible Exposure Limit
PMCC	Pensky-Martens Closed Cup
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act (U.S.)
SARA	Superfund Amendments and Reauthorization Act, 1986 (U.S.)
SDS	Safety Data Sheet
SFCC	Setaflash Closed Cup Tester
STEL	Short-Term Exposure Limit
TDG	Transportation of Dangerous Goods Regulations (Canada)
TLV	Threshold Limit Value
TWA	Time-Weighted Average
TSCA	Toxic Substances Control Act
µL/kg	Micro Litre per Kilogram
WHMIS	Workplace Hazardous Materials Information System (Canada)

Section 1: IDENTIFICATION

Product Name:	SP-2888® R.G. Spray Base
Product Identifier:	PART "A" BASE
Product Code:	850-281
Detail:	Epoxy/Urethane. White.
Product Use:	Exterior coating for pipelines.
Restrictions on Use:	Not available.
Manufacturer/Supplier:	Specialty Polymer Coatings, Inc. 48 Bury Court Brantford, ON, N3S 0B1 Canada
24 Hour Emergency Phone:	In Canada, call CANUTEC: 1-613-996-6666 In USA, call CHEMTREC: 1-800-424-9300
Date of Preparation of SDS:	March 1, 2019

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification:
Skin Irritation, Category 2
Eye Irritation, Category 2A
Sensitization - Skin, Category 1
Carcinogenicity, Category 1A
Specific Target Organ Toxicity (Repeated Exposure), Category 1

LABEL ELEMENTS

Hazard Pictogram(s):

Signal Word: Danger

Hazard Statements:
Causes skin irritation. Causes serious eye irritation.
May cause an allergic skin reaction.
May cause cancer.
Causes damage to organs through prolonged or repeated exposure.

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe dust, mist, vapours, or spray.
Wash thoroughly after handling.
Do not eat, drink or smoke when using this product.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves, protective clothing and eye protection.

Response:
IF ON SKIN: Wash with plenty of water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact

lenses, if present and easy to do. Continue rinsing. Get medical advice/attention if you feel unwell.
If skin irritation or rash occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Take off contaminated clothing and wash it before reuse.

Storage: Store locked up.

Disposal: Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: 10% of this product mixture consists of ingredient(s) of unknown acute toxicity.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

This material is considered hazardous by the Hazardous Products Regulations, 2015.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
Oxirane, 2,2'-((1-methylethylidene)bis(4,1-phenyleneoxymethylene))bis-, Homopolymer	Not available.	25085-99-8	30 - 40
Phenol, polymer with formaldehyde, glycidyl ether	Not available.	28064-14-4	5 - 10
Titanium oxide (TiO2)	Titanium dioxide	13463-67-7	4 - 6
Oxirane, 2,2'-[(2,2-dimethyl-1,3-propanediyl)bis(oxymethylene)]bis-	Neopentyl glycol diglycidyl ether	17557-23-2	3 – 4
Quartz (SiO2)	Quartz	14808-60-7	3 - 4
2-Propenenitrile, polymer with 1,3-butadiene, carboxy-terminated, polymer with 2,2'-[(2,2-dimethyl-1,3-propanediyl)bis(oxymethylene)]bis[oxirane]	Neopentylglycol glycidyl ether, carboxy terminated copolymer of acrylonitrile, butadiene adduct	68909-14-8	1 - 2
Oxirane, 2,2'-[1,4-cyclohexanediylbis (methyleneoxymethylene)]bis-	1,4-Bis(glycidyloxymethyl) cyclohexane	14228-73-0	1 - 2
Poly(oxy(methyl-1,2-ethanediyl)), alpha,alpha',alpha''-1,2,3-propanetriyltris(omega-(2- oxiranylmethoxy)-	Not available.	37237-76-6	1 - 2

Section 4: FIRST-AID MEASURES

Inhalation:

If inhaled: Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Inhalation of Titanium dioxide may cause blood changes. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO2) dust has occurred. Coughing and irritation of throat are early symptoms.

Eye Contact:

If in eyes: Rinse cautiously with water for at least 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.

Acute and delayed symptoms and effects: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin Contact:

If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash it before reuse.

Acute and delayed symptoms and effects: May cause an allergic skin reaction. Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion:

If swallowed: Call a poison center or doctor if you feel unwell. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Ingestion of Titanium dioxide may cause ataxia (failure of muscular coordination), increased blood pressure, hallucinations, hypermotility, muscle contraction/spasticity, fatigue, psychosis, and tremors.

General Advice:

In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians:

Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION
Not flammable or combustible by OSHA/WHMIS criteria.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.
Sensitivity to Static Discharge: This material is not sensitive to static discharge.

MEANS OF EXTINCTION
Suitable Extinguishing Media: Small Fire: Dry chemical, CO2, water spray or regular foam.

Large Fire: Water spray, fog or regular foam. Move containers from fire area if you can do it without risk.

Unsuitable Extinguishing Media: Not available.

Products of Combustion: Oxides of carbon. Oxides of nitrogen. Aldehydes.

Protection of Firefighters: Runoff from fire control or dilution water may cause pollution. Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures: Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate closed spaces before entering.

Personal Precautions: Do not touch or walk through spilled material. Use personal protection recommended in Section 8.

Environmental Precautions: Keep out of drains, sewers, ditches, and waterways.

Methods for Containment: Stop leak if without risk. Do not flush to sewer or allow to enter waterways.

Methods for Clean-Up: Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers.

Other Information: See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:
Do not swallow. Do not breathe dust, mist, vapours, or spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace. See Section 8 for information on Personal Protective Equipment.

Storage:
Store locked up. The acceptable shipping and storage temperature range is between 5 °C (41 °F) and 50 °C (122 °F). Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

Oxirane, 2,2'-((1-methylethylidene)bis(4,1-phenyleneoxymethylene))bis-, homopolymer [CAS No. 25085-99-8]
ACGIH: No TLV established.
OSHA: No PEL established.

Phenol, polymer with formaldehyde, glycidyl ether [CAS No. 28064-14-4]
ACGIH: No TLV established.
OSHA: No PEL established.

Titanium dioxide [CAS No. 13463-67-7]
ACGIH: 10 mg/m³ (TWA); A4 (1992)
OSHA: 15 mg/m³ (Total dust) (TWA);
10 mg/m³ (TWA) (Total dust) [Vacated];

Neopentyl glycol diglycidyl ether [CAS No. 17557-23-2]
ACGIH: No TLV established.
OSHA: No PEL established.

Quartz [CAS No. 14808-60-7]
ACGIH: 0.025 mg/m³ (TWA); A2; Respirable fraction (2009)
OSHA: 30 / (%SiO2 + 2) mg/m³ Quartz (Total dust) (TWA), 10 / (%SiO2 + 2) mg/m³ Quartz (Respirable) & 250 / (%SiO2 + 5) mppcf Quartz (Respirable) (TWA); See Table Z3.
0.1 mg/m³ (As respirable quartz) (TWA) [Vacated];

Neopentylglycol glycidyl ether, carboxy terminated copolymer of acrylonitrile, butadiene adduct [CAS No. 68909-14-8]
ACGIH: No TLV established.
OSHA: No PEL established.

1,4-Bis(glycidyloxymethyl)cyclohexane [CAS No. 14228-73-0]
ACGIH: No TLV established.
OSHA: No PEL established.

Poly(oxy(methyl-1,2-ethanediyl)), alpha,alpha',alpha''-1,2,3-propanetriyltris(omega-(2-oxiranylmethoxy)- [CAS No. 37237-76-6]
ACGIH: No TLV established.
OSHA: No PEL established.

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye/Face Protection: Wear chemical safety glasses, goggles, and/or full face shield. Ensure that eyewash stations and safety showers are close to the workstation location. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection: Chemical resistant gloves with a long cuff that will overlap the clothing sleeves should be worn when handling this product. The glove/clothing overlaps should be sealed by tape. Check with the glove manufacturer to determine the proper glove type.

Skin and Body Protection: Long-sleeved protective clothing is to be worn over regular clothing to cover all exposed areas of arms, legs or torso during mixing and application of the coating. Breathable clothing, such as cotton or disposable coveralls, is recommended.

Respiratory Protection: If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators. Wear a dust respirator for any activity such as sanding or grinding of cured coating.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Specialty Polymer Coatings, Inc. has consulted a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection. These measures are reflected in our comprehensive training of customer employees.

Other: A barrier cream may be used in conjunction with Personal Protective Equipment as an additional safeguard against skin contact.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Viscous liquid.
Colour:	White.
Odour:	Faint epoxy odour.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH:	Not available.
Melting Point / Freezing Point:	Not available.
Initial Boiling Point:	> 300 °C (572 °F)
Boiling Range:	Not available.
Flash Point:	> 100 °C (212 °F) (SFCC)
Evaporation Rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapour Pressure:	Not available.
Vapour Density:	Not available.
Relative Density:	1.55 (Water = 1) at 25 °C (77 °F)
Solubilities:	Negligible solubility in water at 20 °C (68 °F).
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	Not available.
Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.
Density:	Not available.
Coefficient of Water/Oil Distribution:	Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity: Contact with incompatible materials. Sources of ignition. Exposure to heat.

Chemical Stability: Stable under normal storage conditions.

Possibility of Hazardous Reactions: None known.

Conditions to Avoid: Contact with incompatible materials. Sources of ignition. Exposure to heat.

Incompatible Materials: Acids. Bases. Oxidizers. Amines.

Hazardous Decomposition Products: Oxides of carbon. Oxides of nitrogen. Aldehydes.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral: Not available.

Dermal: Not available.

Inhalation: Not available.

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
Oxirane, 2,2'-((1-methylethylidene)bis(4,1-phenyleneoxymethylene)) bis-, homopolymer	25085-99-8	> 15000 mg/kg (rat)	23000 mg/kg (rabbit)	Not available.
Phenol, polymer with formaldehyde, glycidyl ether	28064-14-4	> 2000 mg/kg (rat)	> 2000 mg/kg (rat)	Not available.
Titanium dioxide	13463-67-7	Not available.	Not available.	Not available.
Neopentyl glycol diglycidyl ether	17557-23-2	4500 mg/kg (rat)	Not available	
Quartz	14808-60-7	Not available.	Not available.	0.3 mg/m³ (human); 10Y
Neopentylglycol glycidyl ether, carboxy terminated copolymer of acrylonitrile, butadiene adduct	68909-14-8	Not available	Not available.	Not available.

1,4-Bis(glycidyloxymethyl) cyclohexane	14228-73-0	Not available.	Not available.	Not available.
Poly(oxy(methyl-1,2-ethanediyl)), alpha,alpha', alpha''-1,2,3-propanetriyltris (omega-(2-oxiranylmethoxy)-	37237-76-6	Not available.	Not available.	Not available.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs.

Symptoms (including delayed and immediate effects)

Inhalation: May cause respiratory irritation. Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust. Inhalation of Titanium dioxide may cause blood changes. Acute pneumoconiosis from overwhelming exposure to Silica (Quartz, SiO2) dust has occurred. Coughing and irritation of throat are early symptoms.

Eye: Causes serious eye irritation. Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

Skin: May cause an allergic skin reaction. Causes skin irritation. Signs/symptoms may include localized redness, swelling, and itching.

Ingestion: May cause gastrointestinal irritation. Signs/symptoms may include abdominal pain, stomach upset, nausea, vomiting and diarrhea. Ingestion of Titanium dioxide may cause ataxia (failure of muscular coordination), increased blood pressure, hallucinations, hypermotility, muscle contraction/spasticity, fatigue, psychosis, and tremors.

Skin Sensitization: Hazardous by OSHA/WHMIS criteria. May cause sensitisation through skin contact.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Blood.

Chronic Effects: Hazardous by OSHA/WHMIS criteria. May cause chronic effects. Prolonged or repeated contact may dry skin and cause irritation. As supplied, inhalation of titanium dioxide or quartz from this product is unlikely. After installation and drying, activities such as grinding or sanding of material may generate airborne dust.

Prolonged or repeated exposure to Titanium dioxide may cause lung irritation, chest pain, and pulmonary edema. Repeated exposure to Silica (Quartz, SiO2) can cause silicosis, a form of lung scarring that can cause shortness of breath, reduced lung function, and in severe cases, death.

Carcinogenicity: May cause cancer. Respirable Silica (Quartz, SiO2) dust is classified as a human carcinogen.

Component Carcinogenicity

Component	ACGIH	IARC	NTP	OSHA	Prop 65
Titanium dioxide	A4	Group 2B	Not listed.	OSHA Carcinogen.	Listed.
Quartz	A2	Group 1	List 1	OSHA Carcinogen.	Listed.

Mutagenicity: Not available.

Reproductive Effects: Not available.

Developmental Effects

Teratogenicity: Not available.

Embryotoxicity: Not available.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: Not regulated.

Class: Not applicable.

UN Number: Not applicable.

Packing Group: Not applicable.

Label Code: Not applicable.

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name:	Not regulated.
Class:	Not applicable.
UN Number:	Not applicable.
Packing Group:	Not applicable.
Label Code:	Not applicable.

ICAO/IATA

Proper Shipping Name:	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin), 9, PG III
Class:	9
UN Number:	UN3082
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

IMDG

Proper Shipping Name:	UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Epoxy resin), 9, PG III
Class:	9
UN Number:	UN3082
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)
The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)
The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations

United States
This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

No components are listed.

State Regulations
Massachusetts
US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
Titanium dioxide	13463-67-7	Listed.
Quartz	14808-60-7	E

Note: E = Extraordinarily Hazardous Substance

New Jersey
US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
Titanium dioxide	13463-67-7	Listed.
Quartz	14808-60-7	SHHS

Note: SHHS = Special Health Hazard Substance

Pennsylvania
US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
Titanium dioxide	13463-67-7	Listed.
Quartz	14808-60-7	Listed.

California
California Prop 65:

WARNING This product can expose you to chemicals including Titanium dioxide, Quartz and Methanol, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Section 16: OTHER INFORMATION

Disclaimer:
The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. While Specialty Polymer Coatings, Inc. believes that the data contained herein are accurate and derived from qualified sources, the data are not to be taken as a warranty or representation for which Specialty Polymer Coatings, Inc. assumes legal responsibility. Any use of these data and information must be determined by the user to be in accordance with applicable governmental laws and regulations.

Date of Preparation of SDS:	March 1, 2019
Version:	1.6
GHS SDS Prepared by:	**Aegis Regulatory Inc.**
	Phone: (519) 488-0351

ABBREVIATIONS USED IN PREPARING THIS SDS

% (Percent)	< (Less than) > (Greater than) @ (at)
ACGIH	American Conference of Governmental Industrial Hygienists
ATE	Acute Toxicity Estimate
C	Celsius
CAS No.	CAS Registry Number
CANUTEC	Canadian Transport Emergency Centre
CEIL	Ceiling Limit
CEPA, 1999	Canadian Environmental Protection Act, 1999
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (U.S.)
DOT	Department of Transportation (U.S.)
F	Fahrenheit
g/kg	Grams per Kilogram
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
H	Hour
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
Kg	Kilogram
Lb/gal	Pounds per Gallon
LC_{50}	Lethal Concentration (50% Death)
LD_{50}	Lethal Dose (50% Death)
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
mg/m^3	Milligrams per Cubic Metre
ml/kg	Millilitres per Kilogram
mmHg	Millimetres of Mercury
mppcf	Millions of particles per Cubic Foot
MSHA	Mine Safety and Health Administration (U.S.)
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program (U.S.)
N.O.S.	Not Otherwise Specified
OSHA	Occupational Safety and Health Administration (U.S.)
PEL	Permissible Exposure Limit
PMCC	Pensky-Martens Closed Cup
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act (U.S.)
SARA	Superfund Amendments and Reauthorization Act, 1986 (U.S.)
SDS	Safety Data Sheet
SFCC	Setaflash Closed Cup Tester
STEL	Short-Term Exposure Limit
TDG	Transportation of Dangerous Goods Regulations (Canada)
TLV	Threshold Limit Value
TWA	Time-Weighted Average
TSCA	Toxic Substances Control Act
µL/kg	Micro Litre per Kilogram
WHMIS	Workplace Hazardous Materials Information System (Canada)

Section 1: IDENTIFICATION

Product Name:	SP-2888® R.G. Spray Hardener
Product Identifier:	PART "B" HARDENER
Product Code:	850-283
Detail:	Epoxy/Urethane. Blue.
Product Use:	Curing Agent for SP-2888® R.G. Spray Base.
Restrictions on Use:	Not available.
Manufacturer/Supplier:	Specialty Polymer Coatings, Inc. 48 Bury Court Brantford, ON, N3S 0B1 Canada
24 Hour Emergency Phone:	In Canada, call CANUTEC: 1-613-996-6666 In USA, call CHEMTREC: 1-800-424-9300
Date of Preparation of SDS:	March 5, 2019

Section 2: HAZARD(S) IDENTIFICATION

GHS INFORMATION

Classification:
Skin Corrosion, Category 1B
Eye Damage, Category 1
Sensitization - Skin, Category 1
Toxic to Reproduction, Category 2
Specific Target Organ Toxicity (Single Exposure), Category 3 - Respiratory Irritation

LABEL ELEMENTS

Hazard Pictogram(s):

Signal Word: Danger

Hazard Statements:
Causes severe skin burns and eye damage.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.
May cause respiratory irritation.

Precautionary Statements

Prevention:
Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist, vapours, or spray.
Wash thoroughly after handling.
Use only outdoors or in a well-ventilated area.
Contaminated work clothing should not be allowed out of the workplace.
Wear protective gloves, protective clothing, eye protection and face protection.

Response: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
IF INHALED: Remove person to fresh air and keep comfortable for breathing.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Immediately call a POISON CENTER or doctor.
Wash contaminated clothing before reuse.

Storage: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

Disposal: Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Hazards Not Otherwise Classified: Not applicable.

Ingredients with Unknown Toxicity: 15% of this product mixture consists of ingredient(s) of unknown acute toxicity.

This material is considered hazardous by the OSHA Hazard Communication Standard, (29 CFR 1910.1200).

This material is considered hazardous by the Hazardous Products Regulations, 2015.

Section 3: COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous Ingredient(s)	Common name / Synonyms	CAS No.	% wt./wt.
1-Piperazineethanamine	N-(2-Aminoethyl)piperazine	140-31-8	25 - 35
Phenol, 4,4'-(1-methylethylidene)bis-	Bisphenol A	80-05-7	20 - 30
Phenol, 4-nonyl-, branched	Not available.	84852-15-3	10 - 20
1,2-Ethanediamine, N1-(2-aminoethyl)-	Diethylenetriamine	111-40-0	10 - 30
Phenol, 4-(1,1-dimethylethyl)-	p-tert-Butylphenol	98-54-4	7 - 11
Formaldehyde, polymer with 1,3-benzenedimethanamine and phenol	Not available.	57214-10-5	7 - 11
Benzenemethanol	Benzyl alcohol	100-51-6	7 - 10
1,3-Benzenedimethanamine	Not available.	1477-55-0	5 - 8
Benzenemethanamine, N,N-dimethyl-	N,N-Dimethylbenzylamine	103-83-3	5 - 8
1,2-Ethanediamine, N1-(2-aminoethyl)-, reaction products with bisphenol A diglycidyl ether homopolymer	Not available.	68411-71-2	1 - 4
2,4,6-tris(dimethylaminomethyl)phenol	Not available.	90-72-2	1 - 3

Section 4: FIRST-AID MEASURES

Inhalation:

If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.

Acute and delayed symptoms and effects: May cause respiratory irritation. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.

Eye Contact:

If in eyes: Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center or doctor.

Acute and delayed symptoms and effects: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Skin Contact:

If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Immediately call a poison center or doctor. Wash contaminated clothing before reuse.

Acute and delayed symptoms and effects: May cause an allergic skin reaction. Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Ingestion:

If swallowed: Rinse mouth. Do NOT induce vomiting. Immediately call a poison center or doctor. If vomiting occurs naturally, have victim lean forward to reduce the risk of aspiration. Never give anything by mouth to an unconscious person.

Acute and delayed symptoms and effects: Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

General Advice:

In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).

Note to Physicians:

Symptoms may not appear immediately.

Section 5: FIRE-FIGHTING MEASURES

FLAMMABILITY AND EXPLOSION INFORMATION

Combustible material: may burn but does not ignite readily. When heated, vapours may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards. Contact with metals may evolve flammable hydrogen gas. Containers may explode when heated. Runoff may pollute waterways.

If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

Fire involving Tanks or Car/Trailer Loads: Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from tanks engulfed in fire.

Sensitivity to Mechanical Impact: This material is not sensitive to mechanical impact.
Sensitivity to Static Discharge: This material is sensitive to static discharge at temperatures at or above the flash point.

MEANS OF EXTINCTION

Suitable Extinguishing Media: Small Fire: Dry chemical, CO2 or water spray.

Large Fire: Dry chemical, CO2, alcohol-resistant foam or water spray. Move containers from fire area if you can do it without risk. Dike fire-control water for later disposal; do not scatter the material.

Unsuitable Extinguishing Media: Not available.

Products of Combustion: Oxides of carbon. Oxides of nitrogen. Ammonia.

Protection of Firefighters: TOXIC; inhalation, ingestion or skin contact with material may cause severe injury or death. Contact with molten substance may cause severe burns to skin and eyes. Avoid any skin contact. Effects of contact or inhalation may be delayed. Fire may produce irritating, corrosive and/or toxic gases. Runoff from fire control or dilution water may be corrosive and/or toxic and cause pollution. Wear positive pressure self- contained breathing apparatus (SCBA). Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

Section 6: ACCIDENTAL RELEASE MEASURES

Emergency Procedures: As an immediate precautionary measure, isolate spill or leak area in all directions for at least 50 meters (150 feet). Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate enclosed areas. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Personal Precautions: Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protection recommended in Section 8.

Environmental Precautions: Prevent entry into waterways, sewers, basements or confined areas.

Methods for Containment: Stop leak if you can do it without risk.

Methods for Clean-Up: Collect spillage. Absorb or cover with dry earth, sand or other non- combustible material and transfer to containers.

Other Information: See Section 13 for disposal considerations.

Section 7: HANDLING AND STORAGE

Handling:
Do not swallow. Do not breathe mist, vapours, or spray. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Contaminated work clothing should not be allowed out of the workplace. See Section 8 for information on Personal Protective Equipment.

Storage:
Store in a well-ventilated place. Keep container tightly closed. Store locked up. The acceptable shipping and storage temperature range is between 5 °C (41 °F) and 50 °C (122 °F). Store away from incompatible materials. See Section 10 for information on Incompatible Materials. Keep out of the reach of children.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines
Component

N-(2-Aminoethyl)piperazine [CAS No. 140-31-8]
ACGIH: No TLV established.
OSHA: No PEL established.

Bisphenol A [CAS No. 80-05-7]
ACGIH: No TLV established.
OSHA: No PEL established.

Phenol, 4-nonyl-, branched [CAS No. 84852-15-3]
ACGIH: No TLV established.
OSHA: No PEL established.

Diethylenetriamine [CAS No. 111-40-0]
ACGIH: 1 ppm (TWA); Skin (1985)
OSHA: 1 ppm (TWA) [Vacated];

p-tert-Butylphenol [CAS No. 98-54-4]
ACGIH: No TLV established.
OSHA: No PEL established.

Formaldehyde, polymer with 1,3-benzenedimethanamine and phenol [CAS No. 57214-10-5]
ACGIH: No TLV established.
OSHA: No PEL established.

Benzyl alcohol [CAS No. 100-51-6]
ACGIH: No TLV established.
OSHA: No PEL established.

1,3-Benzenedimethanamine [CAS No. 1477-55-0]
ACGIH: 0.1 mg/m³ (CEIL); Skin (1992)
OSHA: 0.1 mg/m³ (TWA); Skin [Vacated];

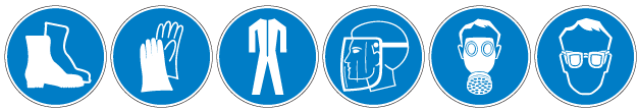
N,N-Dimethylbenzylamine [CAS No. 103-83-3]
ACGIH: No TLV established.
OSHA: No PEL established.

1,2-Ethanediamine, N1-(2-aminoethyl)-, reaction products with bisphenol A diglycidyl ether homopolymer [CAS No. 68411-71-2]
ACGIH: No TLV established.
OSHA: No PEL established.

2,4,6-tris(dimethylaminomethyl)phenol [CAS No. 90-72-2]
ACGIH: No TLV established.
OSHA: No PEL established.

Engineering Controls: Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapour, gas, etc.) below recommended exposure limits.

PERSONAL PROTECTIVE EQUIPMENT (PPE)



Eye/Face Protection: Wear chemical safety glasses, goggles, and/or full face shield. Ensure that eyewash stations and safety showers are close to the workstation location. Use equipment for eye protection that meets the standards referenced by CSA Standard CAN/CSA-Z94.3-92 and OSHA regulations in 29 CFR 1910.133 for Personal Protective Equipment.

Hand Protection: Chemical resistant gloves with a long cuff that will overlap the clothing sleeves should be worn when handling this product. The glove/clothing overlaps should be sealed by tape. Check with the glove manufacturer to determine the proper glove type.

Skin and Body Protection: Long-sleeved protective clothing is to be worn over regular clothing to cover all exposed areas of arms, legs or torso during mixing and application of the coating. Breathable clothing, such as cotton or disposable coveralls, is recommended.

Respiratory Protection: Wear respiratory protection when handling product in confined spaces. If engineering controls and ventilation are not sufficient to control exposure to below the allowable limits then an

appropriate NIOSH/MSHA approved air-purifying respirator that meets the requirements of CSA Standard CAN/CSA-Z94.4-11, with organic vapour/acid gas cartridge and particulate filter, or self-contained breathing apparatus must be used. Supplied air breathing apparatus must be used when oxygen concentrations are low or if airborne concentrations exceed the limits of the air-purifying respirators.

General Hygiene Considerations: Handle according to established industrial hygiene and safety practices. Specialty Polymer Coatings, Inc. has consulted a competent industrial hygienist to determine hazard potential and/or the PPE manufacturers to ensure adequate protection. These measures are reflected in our comprehensive training of customer employees.

Other: A barrier cream may be used in conjunction with Personal Protective Equipment as an additional safeguard against skin contact.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Blue liquid.
Colour:	Blue.
Odour:	Ammonia.
Odour Threshold:	Not available.
Physical State:	Liquid.
pH:	Not available.
Melting Point / Freezing Point:	Not available.
Initial Boiling Point:	Not available.
Boiling Range:	Not available.
Flash Point:	124 °C (255.2 °F) (COC)
Evaporation Rate:	Not available.
Flammability (solid, gas):	Not applicable.
Lower Flammability Limit:	Not available.
Upper Flammability Limit:	Not available.
Vapour Pressure:	Not available.
Vapour Density:	Not available.
Relative Density:	1.04 (Water = 1) at 25 °C (77 °F)
Solubilities:	Moderate solubility in water at 20 °C (68 °F).
Partition Coefficient: n-Octanol/Water:	Not available.
Auto-ignition Temperature:	Not available.

Decomposition Temperature:	Not available.
Viscosity:	Not available.
Percent Volatile, wt. %:	Not available.
VOC content, wt. %:	Not available.
Density:	Not available.
Coefficient of Water/Oil Distribution:	Not available.

Section 10: STABILITY AND REACTIVITY

Reactivity:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Chemical Stability:	Stable under normal storage conditions.
Possibility of Hazardous Reactions:	None known.
Conditions to Avoid:	Contact with incompatible materials. Sources of ignition. Exposure to heat.
Incompatible Materials:	Acids. Bases. Oxidizers.
Hazardous Decomposition Products:	Oxides of carbon. Oxides of nitrogen. Aldehydes. Acids.

Section 11: TOXICOLOGICAL INFORMATION

EFFECTS OF ACUTE EXPOSURE

Product Toxicity

Oral:	Not available.
Dermal:	Not available.
Inhalation:	Not available.

Component Toxicity

Component	CAS No.	LD_{50} oral	LD_{50} dermal	LC_{50}
N-(2-Aminoethyl)piperazine	140-31-8	2140 µL/kg (rat)	880 µL/kg (rabbit)	Not available.
Bisphenol A	80-05-7	2230 mg/kg (rabbit)	3000 µL/kg (rabbit)	Not available.
Phenol, 4-nonyl-, branched	84852-15-3	1300 mg/kg (rat)	Not available.	Not available.
Diethylenetriamine	111-40-0	1080 mg/kg (rat)	1090 mg/kg (rabbit)	Not available.
p-tert-Butylphenol	98-54-4	1500 mg/kg (mammal)	1580 mg/kg (mammal)	Not available.
Formaldehyde, polymer with 1,3-benzenedimethanamine and phenol	57214-10-5	Not available.	Not available.	Not available.

Benzyl alcohol	100-51-6	1040 mg/kg (rabbit)	2000 mg/kg (rabbit)	Not available.
1,3-Benzenedimethanamine	1477-55-0	930 mg/kg (rat)	2000 mg/kg (rabbit)	700 ppm (rat); 1H
N,N-Dimethylbenzylamine	103-83-3	265 mg/kg (rat)	1660 mg/kg (rabbit)	Not available.
1,2-Ethanediamine, N1-(2-aminoethyl)-, reaction products with bisphenol A diglycidyl ether homopolymer	68411-71-2	Not available.	Not available.	Not available.
2,4,6-tris(dimethylaminomethyl) phenol	90-72-2	1200 mg/kg (rat)	1280 mg/kg (rat)	Not available.

Likely Routes of Exposure: Eye contact. Skin contact. Inhalation. Ingestion. Skin absorption.

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Liver. Kidneys. Central nervous system.

Symptoms (including delayed and immediate effects)

Inhalation: May cause respiratory irritation. Signs/symptoms may include burning pain in the nose and throat, coughing, wheezing, shortness of breath and pulmonary edema.

Eye: Causes serious eye damage. Signs/symptoms may include cloudy appearance of the cornea, chemical burns, severe pain, tearing, ulcerations, significantly impaired vision or complete loss of vision.

Skin: May cause an allergic skin reaction. Causes severe skin burns. Signs/symptoms may include localized redness, swelling, itching, intense pain, blistering, ulceration, and tissue destruction.

Ingestion: Causes burns to nose, mouth, throat, and digestive tract. Signs/symptoms may include severe mouth, throat and abdominal pain, nausea, vomiting, and diarrhea, blood in the feces and/or vomitus may also be seen.

Skin Sensitization: Hazardous by OSHA/WHMIS criteria. May cause sensitisation through skin contact.

Respiratory Sensitization: Not available.

Medical Conditions Aggravated By Exposure: Not available.

EFFECTS OF CHRONIC EXPOSURE (from short and long-term exposure)

Target Organs: Skin. Eyes. Gastrointestinal tract. Respiratory system. Lungs. Liver. Kidneys. Reproductive system. Central nervous system.

Chronic Effects: Prolonged or repeated contact may dry skin and cause irritation.

Carcinogenicity: This product does not contain any carcinogens or potential carcinogens as listed by ACGIH, IARC, OSHA, or NTP.

Mutagenicity: Not available.

Reproductive Effects: Suspected of damaging fertility or the unborn child.

Developmental Effects Teratogenicity: Not available.

Embryotoxicity: Possible risk of harm to the unborn child.

Toxicologically Synergistic Materials: Not available.

Section 12: ECOLOGICAL INFORMATION

Ecotoxicity: Not available.

Persistence / Degradability: Not available.

Bioaccumulation / Accumulation: Not available.

Mobility in Environment: Not available.

Other Adverse Effects: Not available.

Section 13: DISPOSAL CONSIDERATIONS

Disposal Instructions: Disposal should be in accordance with applicable Federal, State and local laws and regulations. Local regulations may be more stringent than State or Federal requirements.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name: UN3267, CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Aminoethylpiperazine), 8, PG III

Class: 8

UN Number: UN3267

Packing Group: III

Label Code:

Canada Transportation of Dangerous Goods (TDG)

Proper Shipping Name: UN3267, CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Aminoethylpiperazine), 8, PG III

Class: 8

UN Number: UN3267

Packing Group: III

Label Code:

ICAO/IATA

Proper Shipping Name:	UN3267, CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Aminoethylpiperazine), 8, PG III
Class:	8
UN Number:	UN3267
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

IMDG

Proper Shipping Name:	UN3267, CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (Aminoethylpiperazine), 8, PG III
Class:	8
UN Number:	UN3267
Packing Group:	III
Label Code:	
Marine Pollutant:	Yes.

Section 15: REGULATORY INFORMATION

Chemical Inventories

US (TSCA)
The components of this product are in compliance with the chemical notification requirements of TSCA.

Canada (DSL)
The components of this product are in compliance with the chemical notification requirements of the NSN Regulations under CEPA, 1999.

Federal Regulations
United States
This SDS has been prepared to meet the U.S. OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SARA Title III

Component	Section 302 (EHS) TPQ (lbs.)	Section 304 EHS RQ (lbs.)	CERCLA RQ (lbs.)	Section 313	RCRA CODE	CAA 112(r) TQ (lbs.)
Bisphenol A	Not listed.	Not listed.	Not listed.	313	Not listed.	Not listed.
Phenol, 4-nonyl-, branched	Not listed.	Not listed.	Not listed.	313$	Not listed.	Not listed.

State Regulations
Massachusetts
US Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)

Component	CAS No.	RTK List
N-(2-Aminoethyl)piperazine	140-31-8	Listed.
Bisphenol A	80-05-7	Listed.
Diethylenetriamine	111-40-0	Listed.
Benzyl alcohol	100-51-6	Listed.
1,3-Benzenedimethanamine	1477-55-0	Listed.

New Jersey
US New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5)

Component	CAS No.	RTK List
N-(2-Aminoethyl)piperazine	140-31-8	SHHS
Bisphenol A	80-05-7	Listed.
Diethylenetriamine	111-40-0	SHHS
1,3-Benzenedimethanamine	1477-55-0	Listed.
N,N-Dimethylbenzylamine	103-83-3	Listed.

Note: SHHS = Special Health Hazard Substance

Pennsylvania
US Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)

Component	CAS No.	RTK List
N-(2-Aminoethyl)piperazine	140-31-8	Listed.
Bisphenol A	80-05-7	E
Diethylenetriamine	111-40-0	Listed.
Benzyl alcohol	100-51-6	Listed.
1,3-Benzenedimethanamine	1477-55-0	Listed.

Note: E = Environmental Hazard

California
California Prop 65:

WARNING This product can expose you to chemicals including Bisphenol A, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Section 16: OTHER INFORMATION

Disclaimer:
The information contained in this document applies to this specific material as supplied. It may not be valid for this material if it is used in combination with any other materials. While Specialty Polymer Coatings, Inc. believes that the data contained herein are accurate and derived from qualified sources, the data are not to be taken as a warranty or representation for which Specialty Polymer Coatings, Inc. assumes legal responsibility. Any use of these data and information must be determined by the user to be in accordance with applicable governmental laws and regulations.

Date of Preparation of SDS:	March 5, 2019
Version:	1.7
GHS SDS Prepared by:	**Aegis Regulatory Inc.**
	Phone: (519) 488-0351

ABBREVIATIONS USED IN PREPARING THIS SDS

% (Percent)	< (Less than)	> (Greater than)	@ (at)

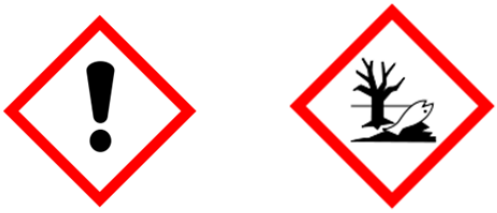
ACGIH	American Conference of Governmental Industrial Hygienists
ATE	Acute Toxicity Estimate
C	Celsius
CAS No.	CAS Registry Number
CANUTEC	Canadian Transport Emergency Centre
CEIL	Ceiling Limit
CEPA, 1999	Canadian Environmental Protection Act, 1999
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act (U.S.)
DOT	Department of Transportation (U.S.)
F	Fahrenheit
g/kg	Grams per Kilogram
GHS	Globally Harmonized System of Classification and Labelling of Chemicals
H	Hour
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods Code
Kg	Kilogram
Lb/gal	Pounds per Gallon
LC_{50}	Lethal Concentration (50% Death)
LD_{50}	Lethal Dose (50% Death)
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
mg/m^3	Milligrams per Cubic Metre
ml/kg	Millilitres per Kilogram
mmHg	Millimetres of Mercury
mppcf	Millions of particles per Cubic Foot
MSHA	Mine Safety and Health Administration (U.S.)
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program (U.S.)
N.O.S.	Not Otherwise Specified
OSHA	Occupational Safety and Health Administration (U.S.)
PEL	Permissible Exposure Limit
PMCC	Pensky-Martens Closed Cup
ppm	Parts per million
RCRA	Resource Conservation and Recovery Act (U.S.)
SARA	Superfund Amendments and Reauthorization Act, 1986 (U.S.)
SDS	Safety Data Sheet
SFCC	Setaflash Closed Cup Tester
STEL	Short-Term Exposure Limit
TDG	Transportation of Dangerous Goods Regulations (Canada)
TLV	Threshold Limit Value
TWA	Time-Weighted Average
TSCA	Toxic Substances Control Act
µL/kg	Micro Litre per Kilogram
WHMIS	Workplace Hazardous Materials Information System (Canada)

SAFETY DATA SHEET

According to 29 CFR 1910.1200(g)

PROTAL 7200 PART A (RESIN)

SECTION 1: Identification of the substance/mixture and of the company/undertaking	
1.1. Product identifier	
Product name	Protal 7200 Part A (Resin)
1.2. Relevant identified uses of the substance or mixture and uses advised against	
Product Use	Industrial use as a protective coating in prevention of corrosion.
Restricted Use	Not intended for use by general public.
1.3. Details of the supplier of the safety data sheet	
Company	Denso North America
Address	9747 Whithorn Drive Houston, TX 77095
Web	www.densona.com
Telephone	1 (281) 821-3355
Fax	1 (281) 821-0304
Email	info@densona.com
1.4. Emergency telephone number	
Emergency telephone number (24 Hour)	1-801-629-0667

SECTION 2: Hazards Identification	
2.1. Classification of the substance or mixture	
2.1.1. Health	Eye Irritation – Category 2 Skin Irritation – Category 3 Skin Sensitization – Category 1
2.1.2. Environmental	Acute Aquatic Toxicity – Category 2 Chronic Aquatic Toxicity – Category 2
2.1.3. Physical	None
2.2. Label elements	
Hazard pictograms	
Signal Word	**Warning**
Hazard statement	H302 – Harmful if swallowed. H315 – Causes skin irritation H317 – May cause an allergic skin reaction. H319 – Causes serious eye irritation H335 – May cause respiratory irritation. H401 – Toxic to aquatic life.

	H411 – Toxic to aquatic life with long-lasting effects.
Precautionary Statement: Prevention	P102 – Keep out of reach of children. P202 – Do not handle until all safety precautions have been read and understood P233 – Keep container tightly closed. P234 – Keep only in original container. P235 – Store in a well ventilated place. Keep cool. P261 – Avoid breathing dust/fume/gas/mist/vapors/spray. P262 – Do not get in eyes, on skin, or on clothing. P264 – Wash thoroughly after handling. P270 – Do not eat, drink, or smoke when using this product. P271 – Use only outdoors or in a well-ventilated area. P272 – Contaminated work clothing should not be allowed out of the workplace. P273 – Avoid release to the environment. P280 – Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary Statement: Response	P301+P330+P331 – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P302+P352 – IF ON SKIN: Wash with plenty of soap and water. P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P314 – Get medical advice / attention if you feel unwell. P333+P313 – If skin irritation or rash occurs: Get medical advice/attention. P337+P313 – If eye irritation persists: Get medical advice/attention. P363 – Wash contaminated clothing before reuse. P391 – Collect spillage.
Precautionary Statement: Disposal	P501 – Dispose of contents/container in accordance with local/regional/national/ international regulations.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical Name	CAS No.	Concentration (%w/w)	Classification
Reaction product: bisphenol-A- (epichlorohydrin); epoxy resin (number average molecular weight < 700)	25068-38-6	10-30%	Skin Irr-2; H315 Eye Irr-2; H319 Skin Sens-1; H317 Aq Chronic–2; H411
Epoxy Phenol Novolac Resin	28064-14-4	10-30%	Skin Irr-2; H315 Skin Sens-1; H317 Aq Acute 2; H401 Aq Chronic 2; H411
Trimethylol propane triglycidyl ether polymer	30499-70-8	5-20%	Skin Corr–2; H315 Eye Corr–2; H319 Skin Sens; H317

Quartz	14808-60-7	10-30%	(1) (2)
Magnesium Silicate	14807-96-6	10-30%	(1) (2)

NOTES:
(1) Substance classified with a health or environmental hazard.
(2) Substance with a workplace exposure limit.

SECTION 4: First aid measures

4.1. General advice	Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.
4.2. Eye contact	Immediately flush eyes with plenty of water for at least 15 minute, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.
4.3. Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse. For contact with hot product, flush contaminated skin with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze. Get medical attention immediately.
4.4. Ingestion	Wash out mouth with water. Remove dentures, if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposure person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
4.5 Inhalation	Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt, or waistband.

4.6. Most important symptoms and effects, both acute and delayed

Eye contact	Irritating to eyes.

Skin contact	Irritating to skin. May cause sensitization by skin contact. May aggravate pre-existing conditions.
Ingestion	May cause nausea and vomiting
Inhalation	May cause irritation to respiratory system.

SECTION 5: Firefighting measures

5.1. Suitable extinguishing media	Alcohol-resistant foam, Carbon dioxide (CO2), Dry chemical, Dry sand, Limestone powder. Do not use a solid water stream as it may scatter and spread fire.
5.2. Specific hazards	Decomposition products may include the following materials: carbon dioxides. Downwind personnel must be evacuated. Burning produces noxious and toxic fumes.
5.3. Special protective equipment for fire-fighters	Avoid contact with skin. Fire-fighters should wear appropriate personal protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
5.4. Further information	Do not allow run-off from fire-fighting to enter drains or water courses.

SECTION 6: Accidental release measures

6.1. Personal precautions	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled materials. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
6.2. Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
6.3. Methods for cleaning up	Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Use absorbent with inert material. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed, waste-disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
6.4. Additional advice	Stop leak if without risk.

SECTION 7: Handling and storage

7.1. Handling	Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking or smoking. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do

	not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
7.2. Storage	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
7.3. Technical precautions	Do not store in reactive metal containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1. Exposure Limit Values

CAS No.	ACGIH TLV
25068-38-6	None established
28064-14-4	None established
30499-70-8	None established
14808-60-7	0.025 mg/m^3 (as respirable dust)
14807-96-6	2 mg/m^3 (as respirable dust)

8.2. Control measures / Personal Protection

8.2.1. Recommended monitoring procedures	To meet the exposure limits for the materials listed above, personal workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
8.2.2. Engineering measures	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
8.2.3. Hygiene measures	Wash hands, forearms, and face after handling chemical products, before eating, smoking or using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing or discard as necessary. Ensure that eyewash stations/bottles with pure water and safety showers are close to the workstation location.
8.2.4. Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

8.2.5. Eye protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. This may include, but is not limited to, safety glasses, goggles and face shields.
8.2.6. Skin protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. This equipment may include, but is not limited to, impervious gloves, gauntlets, impervious shoes/boots, and protective clothing. The breakthrough time of the selected protective glove(s), shoes and clothing must be greater than the intended use period.
8.2.7. Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Environmental exposure controls may also include dikes or other liquid containment devices.

SECTION 9: Physical and chemical properties

Form	Viscous Liquid	Vapor Pressure	ND
Color	White	Relative vapor density	>1
Odor	Mildly irritating	Relative density	1.62
Odor threshold	ND	Water solubility	Slight
pH	about 7	Partition coefficient (n-octanol/water)	ND
Freezing point	ND	Auto-ignition temperature	ND
Boiling point	ND	Decomposition temperature	ND
Flash Point	>200°F (93°C)	Viscosity	255,000 cP @ 73°F (22°C)
Evaporation rate	N/A	Oxidizing	N/A
Flammable Limits	ND	Explosion Limits	ND

SECTION 10: Stability and reactivity

10.1 Stability	The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur.
10.2. Conditions to avoid	Temperatures greater than 300°F (149°C)
10.3. Materials to avoid	Reactive or incompatible with the following materials: Oxidizing materials, Strong acids, Strong alkalis (such as amines)
10.4. Other hazards	Reacts with considerable heat release with some curing agents, such as amines.
10.5. Hazardous decomposition products	Decomposition products may include the following materials: Carbon oxides, hydrocarbons, noxious/toxic fumes

SECTION 11: Toxicological information

11.1. Acute health hazard	**Product:** Acute oral toxicity: ND Acute dermal toxicity: ND **Components:** 25068-38-6 Acute oral toxicity: LD50 (rat): 30,000 mg/kg Acute dermal toxicity: LD50 (rat): >1,200 mg/kg 28064-14-4 Acute oral toxicity: LD50 (rat): >2,000 mg/kg Acute dermal toxicity: LD50 (rabbit): >2,000 mg/kg 30499-70-8 Acute oral toxicity: LD50 (rat): >2,000 mg/kg Acute dermal toxicity: LD50 (rabbit): >2,000 mg/kg No data available on other components present.
11.2. Skin corrosion or irritation	**Product:** No data available, but likely to cause skin irritation in susceptible persons based on components present. **Components:** 25068-38-6 adult rabbit slight to moderate irritation to skin 28064-14-4 adult rabbit slight to moderate irritation to skin 30499-70-8 adult rabbit slight to moderate irritation to skin No skin irritation data available on other components present.
11.3. Serious eye damage or irritation	**Product:** No data available, but likely to be irritating to the eye based on components present. **Components:** 25068-38-6 adult rabbit slightly irritating 28064-14-4 adult rabbit slightly irritating 30499-70-8 adult rabbit serious eye irritation Solids used in this product are irritating to the eyes through mechanical irritation only. No eye irritation data available on other components present.
11.4. Respiratory or skin sensitization	**Product:** No data available but may cause skin sensitization in susceptible persons based on components present. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis. **Components:** 25068-38-6 adult guinea pig Causes skin sensitization. 28064-14-4 adult guinea pig Causes skin sensitization. 30499-70-8 adult guinea pig Causes skin sensitization.

	No respiratory or skin sensitization data available on other components present.
11.5. Germ cell mutagenicity	**Product:** No data available. Not likely to be mutagenic based on components present. **Components:** None of the components is known to have significant mutagenic effects.
11.6. Carcinogenicity	**Product:** No data available. **Components:** 14808-60-7 Remarks: Known carcinogen via inhalation (IARC) 14807-96-6 Remarks: Talc may contain crystalline silica. IARC has concluded that there is limited evidence of carcinogenicity of crystalline silica in humans and sufficient evidence of carcinogenicity of crystalline silica in experimental animals (IARC Class 2A). The NTP has concluded that crystalline silica (respirable) may reasonably be expected to be a carcinogen. No carcinogenicity data available on other components present.
11.7. Reproductive toxicity	**Product:** No data available. Not known to have adverse effects on sexual function, fertility, and/or on development based on components present. **Components:** None of the components is classified as a reproductive toxin.
11.8. STOT – single exposure	**Product:** No data available, but irritation to skin and eyes and sensitization are possible based on components present. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis. **Components:** 14808-60-7 Remarks: If particulates are inhaled, irritation to the respiratory system may occur.
11.9. STOT – repeated exposure	**Product:** No data available, but irritation and/or sensitization to the skin and eyes are possible based on components present. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis. **Components:** 14808-60-7 Remarks: If particulates are inhaled, damage to the kidneys, lungs, and autoimmune system may occur.
11.10. Repeated dose toxicity	**Product:** No data available, but likely to cause skin irritation and may cause sensitization based on components present. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis. **Components:**

	25068-38-6 Skin and eye irritation, sensitization. 28064-14-4 Skin and eye irritation, sensitization. 30499-70-8 Skin and eye irritation, sensitization. 14808-60-7 Remarks: Silicosis, Cancer, Pulmonary Tuberculosis, Kidney disease, autoimmune diseases, non-malignant respiratory diseases 14807-96-6 Remarks: Talc may contain crystalline silica. Repeated inhalation to crystalline silica may result in silicosis, cancer, pulmonary tuberculosis, kidney disease, autoimmune diseases, and non-malignant respiratory diseases.
11.11. Aspiration toxicity	**Product:** None known **Components:** None known
11.12. Further information	Likely routes of exposure – inhalation; skin and eye contact.

SECTION 12: Ecological information

12.1. Ecotoxicity

Product: No data available, but likely to be toxic to aquatic life based on components present.

Components:

25068-38-6

Toxicity to fish – 96 h	LC50: 3.1 mg/L	Test type: Fathead minnow
Toxicity to daphnia and other aquatic invertebrates – 48 h		
	LC50: 1.3 mg/L	Test type: Similar material

28064-14-4

Toxicity to fish – 96 h	LC50: >1-10 mg/L	Test Type: Similar material
Toxicity to daphnia and other aquatic invertebrates – 48 h		
	EC50: >1-10 mg/L	Test Type: Similar material
Toxicity to algae	EC50: ND	

30499-70-8

Toxicity to fish – 96 h	LC50: 10-100 mg/L	Test Type: Similar material
Toxicity to daphnia and other aquatic invertebrates – 48 h		
	EC50: 10-100 mg/L	Test Type: Similar material
Toxicity to algae – 3 h	EC50: >100 mg/L	Test Type: Similar material
Toxicity to bacteria – 24 h	IC50 (Bacteria): ND	Test Type: Static test

Solids used in this product are not toxic to aquatic life. No Ecotoxicity data available on other components present.

12.2. Persistence and degradability

Product: No data available

Components:

25068-38-6 Biodegradability after 28 days – 12%

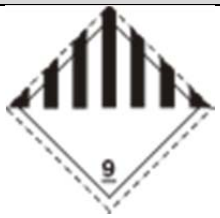
28064-14-4 Not readily biodegradable

	14808-60-7 Persistent/Not biodegradable 14807-96-6 Persistent/Not biodegradable No persistence or degradability data available on other components present.
12.3. Bioaccumulative potential	**Product:** No data available **Components:** No data available
12.4. Mobility in soil	**Product:** No data available **Components:** No data available
12.5. Other adverse effects	**Product:** No data available. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal, Harmful, possibly toxic to aquatic life. **Components:** No data available

SECTION 13: Disposal considerations

13.1. Waste disposal	The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Avoid disposal of spilled material and runoff and contaminated soils in waterways, drains or sewers. Dispose of contaminated containers, soils, etc. in compliance with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Empty any remaining contents from packaging prior to disposal and dispose of as unused product. Do not reuse empty containers.

SECTION 14: Transport information



14.1. UN number	UN3082	
14.2. UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (EPOXY RESIN)	
14.3. Transport hazard class International Carriage of Dangerous Good by Road/Rail	ADR/RID:	9
International Maritime Dangerous Goods	IMDG:	9

International Air Transport Association	IATA:	9
US Code of Federal Regulations	CFR	Not Regulated
Canadian Transportation of Dangerous Goods	TDG:	Not Regulated
US Department of Transportation	DOT:	Not Regulated in non-bulk packaging (Drums/Pails/Cans)

14.4. Packing group: III

14.5. Environmental hazards: Environmental hazards: Yes; Marine pollutant: Yes

ADR/RID

Hazard ID:	90	Tunnel Category:	(E)

IMDG

EmS Code:	F-A S-F		

IATA

Packing Instruction (Cargo):	964	Maximum quantity:	450 L
Packing instruction (Passenger):	964	Maximum quantity:	450 L

SECTION 15: Regulatory information

15.1. OSHA Hazards: Irritant, Sensitizer

15.2. CERCLA Reportable Quantity

Components	CAS No.	Component RQ	Product RQ
None			

15.3. SARA 314 Extremely Hazardous Substances Reportable Quantity: This material does not contain any components with section 314 EHS RQ.

15.4. SARA 311/312 Hazards: None

15.5. SARA Title III, Section 302 Reporting: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

15.6. SARA Title III, Section 313 Reporting: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 313

15.7. Clean Air Act: The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61): None

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489): None

15.8. Clean Water Act	The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 116.4A: None The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 117.3: None This product contains the following toxic pollutants listed under the U.S. Clean Water Act, Section 307: None
15.9. US State Regulations	Massachusetts Right-To-Know 14808-60-7 Crystalline silica (Quartz) is a hazardous substance. Pennsylvania Right-To-Know 14808-60-7 Crystalline silica (Quartz) is a hazardous substance. New Jersey Right-To-Know 14808-60-7 Crystalline silica (Quartz) is a hazardous substance. California Prop 65 WARNING! This product contains a chemical known to the State of California to cause cancer. 14808-60-7 Crystalline silica (Quartz – airborne particles of respirable size)

15.10. International Chemical Inventory Listing

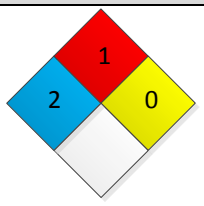
TSCA (US)	Yes (All components of this product are on US inventory)
DSL (Canada)	Yes (All components of this product are on Canadian inventory)
AICS (Australia)	Yes (On Australian inventory or in compliance with inventory)
ICS (New Zealand)	Yes (On New Zealand inventory or in compliance with inventory)
ENCS (Japan)	Yes (On Japanese inventory or in compliance with inventory)
ISHL (Japan)	Yes (On Japanese inventory or in compliance with inventory)
KECI (Korea)	Yes (On Korean inventory or in compliance with inventory)
PICCS (Philippines)	Yes (On Philippine inventory or in compliance with inventory)
IECSC (China)	Yes (On Chinese inventory or in compliance with inventory)

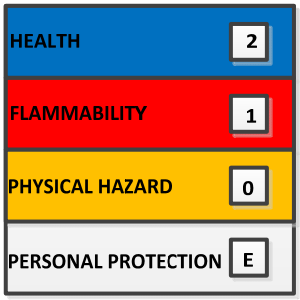
15.11. WHMIS Hazard Classification (Canada)

Class D-2B: Material causing other toxic effects (Toxic).
Canadian NPRI: None required.

SECTION 16: Other information

16.1. NFPA



16.2. HMIS®	 Caution: HMIS ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS ratings are not required on SDS's under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS ratings are to be used with a fully implemented HMIS program. HMIS is a registered mark of the National Paint & Coatings Association (NPCA). HMIS materials may be purchased exclusively from J.J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.
16.3. Text of Risk phrases in Section 3	None.
16.4. Text of Hazard statements in Section 3	H302 – Harmful if swallowed. H315 – Causes skin irritation H317 – May cause an allergic skin reaction. H319 – Causes serious eye irritation H335 – May cause respiratory irritation. H401 – Toxic to aquatic life. H411 – Toxic to aquatic life with long-lasting effects.
16.5. Notice to Reader	The information provided herein was believed by Denso North America ("Denso") to be accurate at the time of preparation and prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Denso are subject to Denso's terms and conditions of sale. DENSO MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MECHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY DENSO, except that the product shall conform to Denso's specifications. Nothing contained herein constitutes an offer for the sale of any product.
16.6. Key/Legend to abbreviations and acronyms used in the safety data sheet	ACGIH American Conference Government Industrial Hygienists AICS Australia, Inventory of Chemical Substances DSL Canada, Domestic Substances List NDSL Canada, Non-Domestic Substances List CAS Chemical Abstract Service CNS Central Nervous System

	EC50 Effective Concentration 50% EGEST EOSCA Generic Exposure Scenario Tool EOSCA European Oilfield Specialty Chemicals Association EINECS European Inventory of Existing Chemical Substances ENCS Japan, Inventory Existing and New Chemical Substances GHS Global Harmonization System IDLH Immediately Dangerous to Life or Health Concentrations IARC International Agency for Research on Cancer IC50 Inhibition Concentration 50% IECSC Inventory of Existing Chemical Substances in China KECI Korea, Existing Chemical Inventory LC50 Lethal Concentration 50% LD50 Lethal Dose 50% LOAEL Lowest Observed Adverse Effect Level MAK Germany Maximum Concentration Values N/A Not Applicable ND Not Determined NFPA National Fire Protection Agency NIOSH National Institute for Occupational Safety & Health NOAEL No Observable Adverse Effect Level NOEC No Observed Effect Concentration NTP National Toxicology Program NZIoC New Zealand Inventory of Chemicals OSHA Occupational Safety & Health Administration PEL Permissible Exposure Limit PICCS Philippines Inventory Commercial Chemical Substances PRNT Presumed Not Toxic RCRA Resource Conservation Recovery Act SARA Superfund Amendments and Reauthorization Act STEL Short-Term Exposure Limit TLV Threshold Limit Value TSCA Toxic Substance Control Act TWA Time Weighted Average UVCB Unknown or Variable Composition, Complex Reaction Products, and Biological Materials WHMIS Workplace Hazardous Materials Information System
16.7. Prepared by	Denso EH & S Department
16.8. Telephone	1-281-821-3355 Corporate 1-801-629-0667 Emergency (24 hour)

SAFETY DATA SHEET

According to 29 CFR 1910.1200(g)

PROTAL 7200 PART B (HARDENER)

SECTION 1: Identification of the substance/mixture and of the company/undertaking	
1.1. Product identifier	
Product name	Protal 7200 Part B (Hardener)
1.2. Relevant identified uses of the substance or mixture and uses advised against	
Product Use	Industrial use as a protective coating in prevention of corrosion.
Restricted Use	Not intended for use by general public.
1.3. Details of the supplier of the safety data sheet	
Company	Denso North America
Address	9747 Whithorn Drive Houston, TX 77095
Web	www.densona.com
Telephone	1 (281) 821-3355
Fax	1 (281) 821-0304
Email	info@densona.com
1.4. Emergency telephone number	
Emergency telephone number (24 Hour)	1-801-629-0667

SECTION 2: Hazards Identification	
2.1. Classification of the substance or mixture	
2.1.1. Health	Skin Irritation – Category 1 Eye Damage – Category 1 Skin Sensitizer – Category 1 STOT Repeat – Category 2 Inhalation, Ingestion, Contact (Liver, Lungs, Skin, Eyes)
2.1.2. Environmental	Acute aquatic toxicity – Category 3
2.1.3. Physical	None
2.2. Label elements	
Hazard pictograms	
Signal Word	**Danger**
Hazard statement	H302 – Harmful if swallowed. H314 – Causes skin severe skin burns and eye damage. H317 – May cause an allergic skin reaction. H318 – Causes serious eye damage. H335 – May cause respiratory irritation. H373 – May cause damage to organs (Liver, Lungs, Skin, Eyes) through prolonged or

	repeated exposure if inhaled, swallowed, contacted. H411 – Toxic to aquatic life with long-lasting effects.
Precautionary Statement: Prevention	P102 – Keep out of reach of children. P202 – Do not handle until all safety precautions have been read and understood P233 – Keep container tightly closed. P234 – Keep only in original container. P235 – Store in a well ventilated place. Keep cool. P261 – Avoid breathing dust/fume/gas/mist/vapors/spray. P262 – Do not get in eyes, on skin, or on clothing. P264 – Wash thoroughly after handling. P270 – Do not eat, drink, or smoke when using this product. P271 – Use only outdoors or in a well-ventilated area. P272 – Contaminated work clothing should not be allowed out of the workplace. P273 – Avoid release to the environment. P280 – Wear protective gloves/protective clothing/eye protection/face protection. P284 – In case of inadequate ventilation, wear respiratory protection.
Precautionary Statement: Response	P301+P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. P302+P352 – IF ON SKIN: Wash with plenty of soap and water. P303+P361+P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P304+P340 – IF INHALED: Remove person to fresh air and keep comfortable for breathing. P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P314 – Get medical advice / attention if you feel unwell. P331 – Do not induce vomiting. P333+P313 – If skin irritation or rash occurs: Get medical advice/attention. P337+P313 – If eye irritation persists: Get medical advice/attention. P363 – Wash contaminated clothing before reuse. P391 – Collect spillage.
Precautionary Statement: Disposal	P501 – Dispose of contents/container in accordance with local/regional/national/ international regulations.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical Name	CAS No.	Concentration (%w/w)	Classification
N-Aminoethylpiperazine	140-31-8	40-70%	Skin Irr 2; H315 Eye Irr 2; H319 Aqua Acute/Chronic 2; H411
4,4'-Isopropylidene-diphenol	80-05-7	1-10%	(1) (2)
Reaction product: bisphenol-F- epichlorohydrin	28064-14-4	5-20%	Skin Irr 2; H315 Eye Irr 2; H319 Skin Sens 1; H317

Reaction product: bisphenol-A- (epichlorohydrin); epoxy resin (number average molecular weight < 700)	25068-38-6	5-20%	Aqua Chronic 2; H411 Xi; R36/38, 43 N; R51/53
4-Nonyl phenol, branched	84852-15-3	1-5%	Skin Irr 2; H315 Eye Irr 2; H319 Aqua Acute/Chronic 1; H411

NOTES:

(1) Substance classified with a health or environmental hazard.
(2) Substance with a workplace exposure limit.

SECTION 4: First aid measures

4.1. General advice

Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.

4.2. Eye contact

Immediately flush eyes with plenty of water for at least 15 minute, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.

4.3. Skin contact

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse. For contact with hot product, flush contaminated skin with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze. Get medical attention immediately.

4.4. Ingestion

Wash out mouth with water. Remove dentures, if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposure person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

4.5 Inhalation

Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie,

	belt, or waistband.

4.6. Most important symptoms and effects, both acute and delayed

Eye contact	Corrosive to the eyes and may cause severe damage including blindness. Causes permanent eye injury. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.
Skin contact	Corrosive. Contact may cause severe burns to skin. Symptoms may include redness, edema, drying, defatting and cracking of the skin. May cause allergic skin reaction or sensitization.
Ingestion	Harmful if swallowed. May produce burns to the lips, oral cavity, upper airway, esophagus and possibly the digestive tract. May cause abdominal pain, nausea, vomiting, or diarrhea.
Inhalation	High vapor concentrations are irritating to the eyes, nose, throat, and lungs. May cause irritation to respiratory system with throat discomfort, coughing or difficulty breathing.

SECTION 5: Firefighting measures

5.1. Suitable extinguishing media	Alcohol-resistant foam, Carbon dioxide (CO2), Dry chemical, or water spray. Do not use a solid water stream as it may scatter and spread fire.
5.2. Specific hazards	Decomposition products may include the following materials: carbon oxides; nitrogen oxides. Downwind personnel must be evacuated. Burning produces noxious and toxic fumes.
5.3. Special protective equipment for fire-fighters	Avoid contact with skin. Fire-fighters should wear appropriate personal protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
5.4. Further information	Do not allow run-off from fire-fighting to enter drains or water courses.

SECTION 6: Accidental release measures

6.1. Personal precautions	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled materials. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
6.2. Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
6.3. Methods for cleaning up	Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Use absorbent with inert

	material. Vacuum or sweep up material and place in a designated, labeled waste container. Dispose of via a licensed, waste-disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
6.4. Additional advice	Stop leak if without risk.

SECTION 7: Handling and storage

7.1. Handling	Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking or smoking. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
7.2. Storage	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep aware from heat, sparks, and flames. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
7.3. Technical precautions	Do not store in reactive metal containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1. Exposure Limit Values

CAS No.	ACGIH TLV
140-31-8	None established
80-05-7	5 mg/m^3 (dust)
28064-14-4	None established
25068-38-6	None established
84852-15-3	None established

8.2. Control measures / Personal Protection

8.2.1. Recommended monitoring procedures	To meet the exposure limits for the materials listed above, personal workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
8.2.2. Engineering measures	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering

	controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
8.2.3. Hygiene measures	Wash hands, forearms, and face after handling chemical products, before eating, smoking or using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing or discard as necessary. Ensure that eyewash stations/bottles with pure water and safety showers are close to the workstation location.
8.2.4. Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Select equipment to provide protection from the ingredients in Section 3 of this document.
8.2.5. Eye protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. This may include, but is not limited to, safety glasses, goggles and face shields.
8.2.6. Skin protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. This equipment may include, but is not limited to, impervious gloves, gauntlets, impervious shoes/boots, and protective clothing. The breakthrough time of the selected protective glove(s), shoes and clothing must be greater than the intended use period.
8.2.7. Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Environmental exposure controls may also include dikes or other liquid containment devices.

SECTION 9: Physical and chemical properties

Form	Liquid	Vapor Pressure	ND
Color	Green	Relative vapor density	>1
Odor	Irritating	Relative density	1.08
Odor threshold	ND	Water solubility	Slight
pH	about 10	Partition coefficient (n-octanol/water)	ND
Freezing point	ND	Auto-ignition temperature	ND
Boiling point	ND	Decomposition temperature	ND
Flash Point	ND	Viscosity	5,500 cP @ 73°F (22°C)
Evaporation rate	N/A	Oxidizing	N/A
Flammable Limits	ND	Explosion Limits	ND

SECTION 10: Stability and reactivity

10.1 Stability	The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur.
10.2. Conditions to avoid	May burn but does not ignite readily. When heated, vapors may form explosive mixtures with air. Containers may explode when heated.
10.3. Materials to avoid	Reactive or incompatible with the following materials: Strong oxidizing agents, acids, alcohols, cresol, glycol, isocyanates, phenol, vinyl acetates, strong bases
10.4. Other hazards	Reacts with considerable heat release.
10.5. Hazardous decomposition products	Decomposition products may include the following materials: Carbon oxides, Nitrogen oxides, Ammonia, Toxic/Noxious fumes

SECTION 11: Toxicological information

11.1. Acute health hazard

Product:

Acute oral toxicity: ND
Acute dermal toxicity: ND

Components:

140-31-8
Acute oral toxicity: LD50 (rabbit): 2097 mg/kg
Acute dermal toxicity: LD50 (rabbit): 866 mg/kg

80-05-7
Acute oral toxicity: LD50 (rat): 3,250 mg/kg
Acute dermal toxicity: LD50 (rabbit): 3,000 mg/kg

28064-14-4
Acute oral toxicity: LD50 (rat): >2,000 mg/kg
Acute dermal toxicity: LD50 (rabbit): >2,000 mg/kg

25068-38-6
Acute oral toxicity: LD50 (rat): 30,000 mg/kg
Acute dermal toxicity: LD50 (rat): >1,200 mg/kg

84852-15-3
Acute oral toxicity: LD50 (rat): 580 mg/kg
Acute dermal toxicity: LD50 (rabbit): 2,031 mg/kg

11.2. Skin corrosion or irritation

Product: No data available, but may cause skin irritation or burns based on components present.

Components:

140-31-8	adult rabbit	corrosive to skin
28064-14-4	adult rabbit	slight to moderate irritation to skin
25068-38-6	adult rabbit	slight to moderate irritation to skin

	84852-15-3 rabbit severe irritation and burns No skin irritation data available or sufficient for classification for other components present.
11.3. Serious eye damage or irritation	**Product:** No data available, but likely to be corrosive to eyes and may cause severe damage including blindness based on components present. **Components:** 140-31-8 adult rabbit corrosive to eyes 28064-14-4 adult rabbit slightly irritating 25068-38-6 adult rabbit slightly irritating 84852-15-3 rabbit severe irritation and burns No eye irritation data available or sufficient for classification for other components present.
11.4. Respiratory or skin sensitization	**Product:** No data available, but may cause skin sensitization in susceptible persons based on components present. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis. **Components:** 140-31-8 adult guinea pig Causes skin sensitization 28064-14-4 adult guinea pig Causes skin sensitization 25068-38-6 adult guinea pig Causes skin sensitization No sensitization data available or sufficient for classification for other components present.
11.5. Germ cell mutagenicity	**Product:** No data available, but not likely to be mutagenic based on components. **Components:** None of the components is known to have significant mutagenic effect.
11.6. Carcinogenicity	**Product:** No data available. **Components:** None of the components is classified as a carcinogen.
11.7. Reproductive toxicity	**Product:** No data available. **Components:** None of the components is known to have significant reproductive effects,
11.8. STOT – single exposure	**Product:** No data available, but irritation, sensitization and/or burns to respiratory system, skin, and eyes are likely– Lungs, Skin, and Eyes. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis. **Components:** See Sections 11.2, 11.3, and 11.4 for specific information regarding the effects of the components.
11.9. STOT – repeated	**Product:** No data available, but, based on components, may cause damage to organs

exposure	through prolonged or repeated exposure – Liver, Lungs, Skin, and Eyes.
11.10. Repeated dose toxicity	**Product:** No data available, but, based on components, Causes skin and eye irritation, damage, burns. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis. Changes to the liver, lungs, skin and eyes are also possible.
11.11. Aspiration toxicity	**Product:** Not determined. **Components:** Not determined.
11.12. Further information	Likely routes of exposure – inhalation; skin and eye contact.

SECTION 12: Ecological information

12.1. Ecotoxicity

Product: No data available, but likely to be toxic to aquatic life based on components present.

Components:

140-31-8

Toxicity to fish – 96 h	LC50: >100 mg/L	
Toxicity to daphnia and other aquatic invertebrates – 48 h	LC50: 32 mg/L	
Toxicity to algae – 72 h	LC50: >1,000 mg/L	

80-05-7

Toxicity to fish – 96 h	LC50: 4.6 mg/L	

28064-14-4

Toxicity to fish – 96 h	LC50: >1-10 mg/L	Test Type: Similar material
Toxicity to daphnia and other aquatic invertebrates – 48 h	EC50: >1-10 mg/L	Test Type: Similar material
Toxicity to algae	EC50: ND	

25068-38-6

Toxicity to fish – 96 h	LC50: 3.1 mg/L	Test type: Fathead minnow
Toxicity to daphnia and other aquatic invertebrates – 48 h	LC50: 1.3 mg/L	

84852-15-3

Toxicity to fish – 96 h static	LC50: 0.05 mg/L	
Toxicity to daphnia and other aquatic invertebrates – 48 h static	EC50: 0.085 mg/L	
Toxicity to algae – 96 h	ErC50: 0.41 mg/L	

12.2. Persistence and degradability

Product: No data available

Components:

140-31-8	<60% after 28 days.
28064-14-4	Not readily biodegradable.

	25068-38-6 12% after 28 days. 84852-15-3 100% after 63 days.
12.3. Bioaccumulative potential	**Product:** No data available **Components:** Not determined.
12.4. Mobility in soil	**Product:** Not determined. **Components:** Not determined.
12.5. Other adverse effects	**Product:** Not determined. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal, toxic to aquatic life. **Components:** No data available

SECTION 13: Disposal considerations

13.1. Waste disposal	The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Avoid disposal of spilled material and runoff and contaminated soils in waterways, drains or sewers. Dispose of contaminated containers, soils, etc. in compliance with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Empty any remaining contents from packaging prior to disposal and dispose of as unused product. Do not reuse empty containers.

SECTION 14: Transport information

14.1. UN number	UN3066	
14.2. UN proper shipping name	PAINT	
14.3. Transport hazard class		
International Carriage of Dangerous Good by Road/Rail	ADR/RID:	8
International Maritime Dangerous Goods	IMDG:	8
International Air Transport		

Association	IATA:	8
US Code of Federal Regulations	CFR	8
Canadian Transportation of Dangerous Goods	TDG:	8
US Department of Transportation	DOT:	8
14.4. Packing group	II	
14.5. Environmental hazards	Environmental hazards: Yes	Marine pollutant: Yes
	IMDG	
	EmS Code:	F-A S-B
	IATA	
	Packing Instruction (Cargo):	855 Maximum quantity: 30 L
	Packing instruction (Passenger):	851 Maximum quantity: 1 L

SECTION 15: Regulatory information

15.1. OSHA Hazards	Irritant, Sensitizer, Corrosive
15.2. CERCLA Reportable Quantity	Components CAS No. Component RQ Product RQ None
15.3. SARA 314 Extremely Hazardous Substances Reportable Quantity	This material does not contain any components with a section 314 Extremely Hazardous Substances RQ.
15.4. SARA 311/312 Hazards	Acute health hazard, Chronic health hazard
15.5. SARA Title III, Section 302 Reporting	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
15.6. SARA Title III, Section 313 Reporting	The following chemicals in this material are subject to the reporting requirements of SARA Title III, Section 313: 4,4'-Isopropylidenediphenol
15.7. Clean Air Act	The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61): None. This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F). The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489): None.
15.8. Clean Water Act	The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 116.4A: None.

	The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 117.3: None. This product contains the following toxic pollutants listed under the U.S. Clean Water Act, Section 307: None.
15.9. US State Regulations	Massachusetts Right-To-Know 4,4'-Isopropylidenediphenol Pennsylvania Right-To-Know 4,4'-Isopropylidenediphenol New Jersey Right-To-Know 4,4'-Isopropylidenediphenol California Prop 65 This product contains no chemicals known to the State of California to cause cancer. This product contains no chemicals known to the State of California to cause birth defects or other reproductive harm.

15.10. International Chemical Inventory Listing

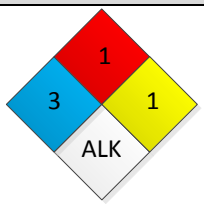
TSCA (US)	Yes (All components of this product are on US inventory)
DSL (Canada)	Yes (All components of this product are on Canadian inventory)
AICS (Australia)	Yes (On Australian inventory or in compliance with inventory)
ICS (New Zealand)	Yes (On New Zealand inventory or in compliance with inventory)
ENCS (Japan)	Yes (On Japanese inventory or in compliance with inventory)
ISHL (Japan)	Yes (On Japanese inventory or in compliance with inventory)
KECI (Korea)	Yes (On Korean inventory or in compliance with inventory)
PICCS (Philippines)	Yes (On Philippine inventory or in compliance with inventory)
IECSC (China)	Yes (On Chinese inventory or in compliance with inventory)

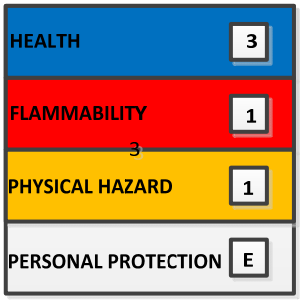
15.11. WHMIS Hazard Classification (Canada)

Class D-2B: Material causing other toxic effects (Toxic).
Canadian NPRI: None required.

SECTION 16: Other information

16.1. NFPA



16.2. HMIS®	 Caution: HMIS ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS ratings are not required on SDS's under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS ratings are to be used with a fully implemented HMIS program. HMIS is a registered mark of the National Paint & Coatings Association (NPCA). HMIS materials may be purchased exclusively from J.J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.
16.3. Text of Risk phrases in Section 3	R36/38 – Irritating to eyes and skin. R43 – May cause sensitization by skin contact. R51/53 – Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
16.4. Text of Hazard statements in Section 3	H302 – Harmful if swallowed. H314 – Causes skin severe skin burns and eye damage. H315 – Causes skin irritation. H317 – May cause an allergic skin reaction. H318 – Causes serious eye damage. H319 – Causes serious eye irritation. H335 – May cause respiratory irritation. H373 – May cause damage to organs through prolonged or repeated exposure. H411 – Toxic to aquatic life with long-lasting effects.
16.5. Notice to Reader	The information provided herein was believed by Denso North America ("Denso") to be accurate at the time of preparation and prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Denso are subject to Denso's terms and conditions of sale. DENSO MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MECHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY DENSO, except that the product shall conform to Denso's specifications. Nothing contained herein constitutes an offer for the sale of any product.
16.6. Key/Legend to abbreviations and acronyms used in the safety data sheet	ACGIH American Conference Government Industrial Hygienists ADR European Agreement for International Carriage of Dangerous Materials Road AICS Australia, Inventory of Chemical Substances

DSL	Canada, Domestic Substances List
NDSL	Canada, Non-Domestic Substances List
CAS	Chemical Abstract Service
CNS	Central Nervous System
DOT	Department of Transportation
EC50	Effective Concentration 50%
EGEST	EOSCA Generic Exposure Scenario Tool
EOSCA	European Oilfield Specialty Chemicals Association
EINECS	European Inventory of Existing Chemical Substances
ENCS	Japan, Inventory Existing and New Chemical Substances
GHS	Global Harmonization System
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IC50	Inhibition Concentration 50%
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
KECI	Korea, Existing Chemical Inventory
LC50	Lethal Concentration 50%
LD50	Lethal Dose 50%
LOAEL	Lowest Observed Adverse Effect Level
MAK	Germany Maximum Concentration Values
N/A	Not Available
ND	Not Determined
NFPA	National Fire Protection Agency
NIOSH	National Institute for Occupational Safety & Health
NOAEL	No Observable Adverse Effect Level
NOEC	No Observed Effect Concentration
NTP	National Toxicology Program
NZIoC	New Zealand Inventory of Chemicals
OSHA	Occupational Safety & Health Administration
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory Commercial Chemical Substances
PRNT	Presumed Not Toxic
RCRA	Resource Conservation Recovery Act
RID	European Agreement for International Carriage of Dangerous Materials Rail
RQ	Reportable Quantity
SARA	Superfund Amendments and Reauthorization Act
STEL	Short-Term Exposure Limit
TDG	Transportation of Dangerous Goods (Canada)
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
WHMIS	Workplace Hazardous Materials Information System

16.7. Prepared by	Denso EH & S Department
16.8. Telephone	1-281-821-3355 Corporate 1-801-629-0667 Emergency (24 hour)

SAFETY DATA SHEET

According to 29 CFR 1910.1200(g)

PROTAL 7125 PART A (RESIN)

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product name	Protal 7125 Part A (Resin)

1.2. Relevant identified uses of the substance or mixture and uses advised against

Product Use	Industrial use as a protective coating in prevention of corrosion.
Restricted Use	Not intended for use by general public.

1.3. Details of the supplier of the safety data sheet

Company	Denso North America
Address	9747 Whithorn Drive Houston, TX 77095
Web	www.densona.com
Telephone	1 (281) 821-3355
Fax	1 (281) 821-0304
Email	info@densona.com

1.4. Emergency telephone number

Emergency telephone number (24 Hour)	1-801-629-0667

SECTION 2: Hazards Identification

2.1. Classification of the substance or mixture

2.1.1. Health	Acute Toxicity (Inhalation) – Category 4 Skin Irritation – Category 2 Eye Irritation – Category 2A Germ Cell Mutagenicity – Category 2 Carcinogenicity – Category 2 Reproductive Toxicity – Category 1B Specific Target Organ Toxicity – Single Exposure – Category 1 (CNS) Specific Target Organ Toxicity – Single Exposure – Category 3 (Respiratory) Specific Target Organ Toxicity – Repeated Exposure – Category 1 (Liver, CNS, Hearing organ, Visual organ) Aspiration Hazard – Category 1
2.1.2. Environmental	Acute Aquatic Toxicity – Category 2
2.1.3. Physical	Flammable Liquid – Category 3

2.2. Label elements

Hazard pictograms



Signal Word	**Danger**
Hazard statement	H226 – Flammable liquid and vapor. H304 – May be fatal if swallowed and enters airways. H315 – Causes skin irritation. H319 – Causes serious eye irritation. H332 – Harmful if inhaled. H335 – May cause respiratory irritation. H341 – Suspected of causing genetic defects. H351 – Suspected of causing cancer. H360 – May damage fertility or the unborn child. H370 – Causes damage to organs (CNS) by inhalation. H372 – Causes damage to organs (Liver, CNS, Hearing organ, Visual organ) through prolonged or repeated exposure by inhalation. H401 – Toxic to aquatic life.
Precautionary Statement: Prevention	P102 – Keep out of reach of children. P202 – Do not handle until all safety precautions have been read and understood. P210 – Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P211 – Do not spray on an open flame or other ignition source. P233 – Keep container tightly closed. P234 – Keep only in original container. P235 – Store in a well ventilated place. Keep cool. P240 – Ground/bond container and receiving equipment. P241 – Use explosion-proof electrical/ventilating/light/equipment. P242 – Use only non-sparking tools. P243 – Take precautionary measures against static discharge. P261 – Avoid breathing dust/fume/gas/mist/vapors/spray. P262 – Do not get in eyes, on skin, or on clothing. P263 – Avoid contact during pregnancy. P264 – Wash thoroughly after handling. P270 – Do not eat, drink, or smoke when using this product. P271 – Use only outdoors or in a well-ventilated area. P272 – Contaminated work clothing should not be allowed out of the workplace. P273 – Avoid release to the environment. P280 – Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary Statement: Response	P301+P330+P331+P310 – IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER or doctor. P303+P361+P353+P352 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash with plenty of soap and water. P304+P340+P314 – IF INHALED: Remove person to fresh air and keep comfortable for breathing. Get medical advice / attention if you feel unwell. P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

	P314 – Get medical advice / attention if you feel unwell. P333+P313 – If skin irritation or rash occurs: Get medical advice/attention. P337+P313 – If eye irritation persists: Get medical advice/attention. P362+P364 – Take off contaminated clothing and wash it before reuse. P370+P378 – In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish. P391 – Collect spillage.
Precautionary Statement: Disposal	P501 – Dispose of contents/container in accordance with local/regional/national/ international regulations.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical Name	CAS No.	Concentration (%w/w)	Classification
Vinyl Ester Resin	Proprietary	10-30%	N/A
Styrene (1)	100-42-5	10-30%	Flam Liq 3; H226 Acute Tox 4 (inhal); H332 Skin Irr 2; H315 Eye Irr 2A; H319 Germ cell mut 2; H341 Carcinogenicity 2; H351 STOT-Single 1 (CNS); H370 STOT-Single 3 (Res irr); H335 STOT-Repeat 1 (Blood, liver, CNS, respiratory); H372 Asp Haz 1; H304 Aq Acute 2; H401
Titanium Dioxide	13463-67-7	1-5%	(3)
Wollastonite	13983-17-0	5-20%	(3)
Magnesium Silicate	14807-96-6	20-40%	(2) (3)

NOTES:

(1) Styrene may contain up to 0.4% ethylbenzene (100-41-4)
(2) Substance classified with a health or environmental hazard.
(3) Substance with a workplace exposure limit.

SECTION 4: First aid measures

4.1. General advice	Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.
4.2. Eye contact	Immediately flush eyes with plenty of water for at least 15 minute, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical

	attention if eye irritation persists.
4.3. Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. In the event of any complaints or symptoms, avoid further exposure. If skin irritation or a rash occurs, get medical advice/attention. Wash clothing before reuse. Clean shoes thoroughly before reuse. For contact with hot product, flush contaminated skin with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze. Get medical attention immediately.
4.4. Ingestion	Wash out mouth with water. Remove dentures, if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposure person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention immediately. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
4.5 Inhalation	Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt, or waistband.

4.6. Most important symptoms and effects, both acute and delayed

Eye contact	Irritating to eyes.
Skin contact	Contact causes skin irritation. Prolonged skin contact may defat the skin and produce dermatitis.
Ingestion	May cause irritation, nausea, vomiting and diarrhea. Aspiration hazard if swallowed – can enter lungs and cause chemical pneumonia or pulmonary edema. Ingestion is not an anticipated route of exposure for this material in industrial use.
Inhalation	May cause irritation to respiratory system. Inhalation of high vapor concentrations can cause CNS-depression and narcosis. Upon repeated exposure, damage to auditory organs may occur. May cause damage to the kidneys, liver, eyes, brain, respiratory system, CNS through prolonged or repeated exposure if inhaled. Suspect mutagen. Suspect carcinogen.

SECTION 5: Firefighting measures

5.1. Suitable extinguishing media	Alcohol-resistant foam, Carbon dioxide (CO2), Dry chemical, Dry sand, Limestone powder. Do not use a solid water stream as it may scatter and spread fire.
5.2. Specific hazards	Decomposition products may include the following materials: carbon oxides. Downwind personnel must be evacuated. Burning produces noxious and toxic fumes. Flammable liquid and vapor. May form explosive/flammable vapor/air mixtures. Autopolymerization may occur if uninhibited, heated or involved in a fire. Autopolymerization will be accompanied by generation of heat which can produce additional flammable/explosive vapors. Avoid heat, high temperatures and static electricity.
5.3. Special protective equipment for fire-fighters	Avoid contact with skin. Fire-fighters should wear appropriate personal protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
5.4. Further information	Do not allow run-off from fire-fighting to enter drains or water courses. Keep product away from open flames, hot surfaces and sources of ignition. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Move non-burning material, as feasible, to a safe location as soon as possible. Closed containers containing hot material may explode due to an accumulation of vapor or due to polymerization of the product. Use water spray to cool fire-exposed containers. Empty containers may retain product residue.

SECTION 6: Accidental release measures

6.1. Personal precautions	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering and upwind of spill/leak. Do not touch or walk through spilled materials. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8). Keep product away from or remove all sources of ignition. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Beware of vapors accumulating to form explosive concentrations.
6.2. Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
6.3. Methods for cleaning up	Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Use absorbent with inert material. Sweep up material and place in a designated, labeled waste container. Dispose of via a licensed, waste-disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
6.4. Additional advice	Stop leak if without risk.

SECTION 7: Handling and storage

7.1. Handling	Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking or smoking. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Take necessary action to avoid static electricity discharge. Keep away from open flames, hot surfaces and sources of ignition. Use non-sparking tools. Ground containers.
7.2. Storage	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and sources of ignition and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
7.3. Technical precautions	Do not store in reactive metal containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1. Exposure Limit Values

CAS No.	ACGIH TLV
100-42-5	20 ppm-TWA (IDLH 700 ppm)
13463-67-7	10 mg/m3 (total – respirable, inhalable)
13983-17-0	10 mg/m3 (total – respirable, inhalable)
14807-96-6	2 mg/m^3 (as respirable dust)

8.2. Control measures / Personal Protection

8.2.1. Recommended monitoring procedures	To meet the exposure limits for the materials listed above, personal workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
8.2.2. Engineering measures	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
8.2.3. Hygiene measures	Wash hands, forearms, and face after handling chemical products, before eating, smoking or using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing or discard as necessary. Ensure that eyewash stations/bottles with pure water and safety showers are close to the workstation

	location.
8.2.4. Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.
8.2.5. Eye protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. This may include, but is not limited to, safety glasses, goggles and face shields.
8.2.6. Skin protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. This equipment may include, but is not limited to, impervious gloves, gauntlets, impervious shoes/boots, and protective clothing. The breakthrough time of the selected protective glove(s), shoes and clothing must be greater than the intended use period.
8.2.7. Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Environmental exposure controls may also include dikes or other liquid containment devices.

SECTION 9: Physical and chemical properties

Form	Viscous Liquid	Vapor Pressure	ND
Color	White	Relative vapor density	>1
Odor	Mildly irritating	Relative density	1.52
Odor threshold	ND	Water solubility	Slight
pH	about 7	Partition coefficient (n-octanol/water)	ND
Freezing point	ND	Auto-ignition temperature	ND
Boiling point	ND	Decomposition temperature	ND
Flash Point	88°F (31°C)	Viscosity	20,000 cP @ 73°F (22°C)
Evaporation rate	N/A	Oxidizing	N/A
Flammable Limits	ND	Explosion Limits	ND

SECTION 10: Stability and reactivity

10.1 Stability	The product is stable. Under normal conditions of storage and use, hazardous polymerization will not occur. If not kept under recommended conditions of storage and use, the product may polymerize with heat evolution.
10.2. Conditions to avoid	Heat, Light, Sources of ignition, Depletion of inhibitor
10.3. Materials to avoid	Reactive or incompatible with the following materials: Oxidizing materials, Strong acids, Strong alkalis (such as amines), Metal salts, Corrosive to copper and copper

alloys.

10.4. Other hazards

Reacts with considerable heat release with some chemicals, such as amines, peroxides, halogens, cobalt.

10.5. Hazardous decomposition products

Decomposition products may include the following materials: Carbon oxides, Hydrocarbons, noxious and toxic gases/fumes.

SECTION 11: Toxicological information

11.1. Acute health hazard

Product:

Acute oral toxicity:		ND
Acute dermal toxicity:		ND

Components:

100-42-5

Acute oral toxicity:	LD50 (rat):	2,650 mg/kg
Acute dermal toxicity:	LD50 (rat):	>26.4 mg/kg
Acute inhalation toxicity:	LD50 (rat):	11.8 mg/L – 4 h

13463-67-7

Acute oral toxicity:	LD50 (rat):	>10,000 mg/kg
Acute dermal toxicity:	LD50 (rabbit):	>10,000 mg/kg
Acute inhalation toxicity:	LD50 (rat):	>6.8 mg/L – 4 h

Acute toxicity data are not available for other components of this product.

11.2. Skin corrosion or irritation

Product: No data available, but may cause skin irritation based on components.
Components:

100-42-5	May cause skin irritation in susceptible persons.
13463-67-7	Can cause skin irritation if not promptly washed from the skin.

No corrosion or irritation due to skin contact has been reported for other components of this product.

11.3. Serious eye damage or irritation

Product: No data available, but likely to be irritating to the eye based on components.
Components:

100-42-5	Irritating to eyes.

Eye irritation has been reported for the other components of this product, but only due to the mechanical irritation of the eye by any foreign body.

11.4. Respiratory or skin sensitization

Product: No data available, but not likely to be a skin sensitizer based on components.
Components: None of the components cause skin sensitization.

11.5. Germ cell mutagenicity

Product: No data available, but likely to be mutagenic based on components.
Components:

	100-42-5 Remarks: In vitro tests showed mutagenic effects which were not observed with in vivo tests, resulting in a classification of suspect mutagen. No mutagenic effects have been reported for the other components of this product.
11.6. Carcinogenicity	**Product:** No data available, but likely to be classifiable as a suspect carcinogen based on components. **Components:** 100-42-5 Remarks: This substance has been reported to cause tumors in certain animal species. IARC Group 2B: Possibly carcinogenic to humans. NTP: Reasonably anticipated to be a human carcinogen. ACGIH: No ingredient of this component present at levels greater than 0.1% is identified as a carcinogen or potential carcinogen by ACGIH. 13463-67-7 Remarks: Characterized by IARC as possibly carcinogenic to humans (group 2B) by inhalation (not ingestion). It has not been characterized as a potential carcinogen by either NTP or OSHA. 13983-17-0 Remarks: None known. 14807-96-6 Remarks: Talc may contain crystalline silica. IARC has concluded that there is limited evidence of carcinogenicity of crystalline silica in humans and sufficient evidence of carcinogenicity of crystalline silica in experimental animals (IARC Class 2A). The NTP has concluded that crystalline silica (respirable) may reasonably be expected to be a carcinogen.
11.7. Reproductive toxicity	**Product:** No data available. Not known to have adverse effects on sexual function, fertility, and/or on development based on components. **Components:** None of the components is classified as a reproductive toxin.
11.8. STOT – single exposure	**Product:** No data available, but irritation to skin, eyes and respiratory tract, drowsiness or dizziness is possible based on components. **Components:** 100-42-5 Irritation to eyes, skin, and respiratory system. May cause drowsiness or dizziness. 13463-67-7, 13983-17-0, 14807-96-6, 65997-17-3 Remarks: If particulates are inhaled or allowed to contact skin for extended time periods, irritation to the respiratory system or skin may occur. Mechanical irritant to the eyes.
11.9. STOT – repeated	**Product:** No data available, but irritation to the skin, eyes and respiratory tract and

exposure	damage to the auditory organs is possible based on components. **Components:** 100-42-5 Remarks: Irritation to eyes, skin, and respiratory system. Dermatitis. May cause damage to organs (auditory organs, liver, CNS, eyes) through prolonged or repeated exposure. No adverse effects in this area have been reported for the other components of this product.
11.10. Repeated dose toxicity	**Product:** No data available, but repeated exposure will likely result in adverse health effects based on components. **Components:** 100-42-5 Species: Mouse Application Route: Oral Dose: 0, 150, 300 mg/kg Exposure Time: 78 wk No. of Exposures: 5 d/wk NOEL: 150 mg/kg Lowest observable effect level: 300 mg/kg Species: Rat Application Route: Inhalation Exposure Time: 4 wk Dose: 0, 500, 650, 850, 1000 ppm Exposures: 6 h/d, 5d/wk NOEL: 500 ppm Target Organs: Ototoxicity 14807-96-6 Remarks: Talc may contain crystalline silica. Repeated inhalation to crystalline silica may result in silicosis, cancer, pulmonary tuberculosis, kidney disease, autoimmune diseases, and non-malignant respiratory diseases.
11.11. Aspiration toxicity	**Product:** No data available, but may be fatal if swallowed and enters airways based on components. **Components:** 100-42-5 May be fatal if swallowed and enters airways.
11.12. Further information	Likely routes of exposure – inhalation; skin and eye contact.

SECTION 12: Ecological information

12.1. Ecotoxicity	**Product:** No data available, but likely to be toxic to aquatic life based on components present. **Components:** 100-42-5 Toxicity to fish – 96 h	LC50: 4.02 mg/L	Species: Fathead minnow
	Toxicity to daphnia and other aquatic invertebrates – 48 h	LC50: 4.7 mg/L	Species: Daphnia magna
	Toxicity to algae – 72 h	EC50: 4.9 mg/L	Species: Selenastrum capricornutum (algae)
	Toxicity to bacteria – 96 h	EC10: 0.28 mg/L	Species: Skeletonema costatum (marine algae)

	Other components Remarks: Not toxic to aquatic life
12.2. Persistence and degradability	**Product:** No data available. **Components:** 100-42-5 Remarks: Considered to be readily biodegradable Other components Remarks: Not readily biodegradable.
12.3. Bioaccumulative potential	**Product:** No data available. **Components:** No data available.
12.4. Mobility in soil	**Product:** No data available. **Components:** No data available.
12.5. Other adverse effects	**Product:** No data available. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal, Harmful, possibly toxic to aquatic life. **Components:** No data available.

SECTION 13: Disposal considerations

13.1. Waste disposal	The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Avoid disposal of spilled material and runoff and contaminated soils in waterways, drains or sewers. Dispose of contaminated containers, soils, etc. in compliance with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Empty any remaining contents from packaging prior to disposal and dispose of as unused product. Do not reuse empty containers.

SECTION 14: Transport information

14.1. UN number	UN1263
14.2. UN proper shipping name	PAINT

14.3. Transport hazard class		
International Carriage of Dangerous Good by Road/Rail	ADR/RID:	3
International Maritime Dangerous Goods	IMDG:	3
International Air Transport Association	IATA:	3
US Code of Federal Regulations	CFR	3
Canadian Transportation of Dangerous Goods	TDG:	3
US Department of Transportation	DOT:	3
14.4. Packing group	III	
14.5. Environmental hazards	Environmental hazards: No	Marine pollutant: No

ADR/RID

Hazard ID:	30	Tunnel Category:	(D/E)

IMDG

EmS Code:	F-E S-E		

IATA

Packing Instruction (Cargo):	366	Maximum quantity:	220 L
Packing instruction (Passenger):	355	Maximum quantity:	60 L

SECTION 15: Regulatory information

15.1. OSHA Hazards

Flammable Liquid, Moderate eye irritant, Aspiration hazard, Moderate skin irritant, Moderate respiratory irritant, Harmful by inhalation.

15.2. CERCLA Reportable Quantity

Components	CAS No.	Component RQ	Product RQ
Styrene	100-42-5	1,000 lbs	4,000 lbs

15.3. SARA 314 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with section 314 EHS RQ.

15.4. SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard, Chronic Health Hazard, Reactivity Hazard

15.5. SARA Title III, Section 302 Reporting

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

15.6. SARA Title III, Section 313 Reporting

This material contains the following chemicals that are subject to the reporting requirements of SARA Title III, Section 313: Styrene 100-42-5

15.7. Clean Air Act

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12

	(40 CFR 61): Styrene 100-42-5 This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F). The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489): Styrene 100-42-5
15.8. Clean Water Act	The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 116.4A: Styrene 100-42-5 The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 117.3: Styrene 100-42-5 Cat C 1000 lb RQ This product contains the following toxic pollutants listed under the U.S. Clean Water Act, Section 307: None
15.9. US State Regulations	Pennsylvania Right-To-Know 100-4205 Styrene New Jersey Right-To-Know 100-42-5 Styrene California Prop 65 WARNING! This product does not contain a chemical known to the State of California to cause cancer.

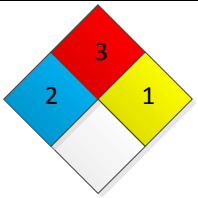
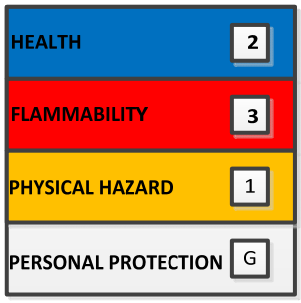
15.10. International Chemical Inventory Listing

TSCA (US)	Yes (All components of this product are on US inventory)
DSL (Canada)	Yes (All components of this product are on Canadian inventory)
AICS (Australia)	Yes (On Australian inventory or in compliance with inventory)
ICS (New Zealand)	Yes (On New Zealand inventory or in compliance with inventory)
ENCS (Japan)	Yes (On Japanese inventory or in compliance with inventory)
ISHL (Japan)	Yes (On Japanese inventory or in compliance with inventory)
KECI (Korea)	Yes (On Korean inventory or in compliance with inventory)
PICCS (Philippines)	Yes (On Philippine inventory or in compliance with inventory)
IECSC (China)	Yes (On Chinese inventory or in compliance with inventory)

15.11. WHMIS Hazard Classification (Canada)

Class D-2A: Very Toxic Material causing other toxic effects.
Class B2: Flammable Liquid
Canadian NPRI: None required.

SECTION 16: Other information

16.1. NFPA	
16.2. HMIS®	 Caution: HMIS ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS ratings are not required on SDS's under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS ratings are to be used with a fully implemented HMIS program. HMIS is a registered mark of the National Paint & Coatings Association (NPCA). HMIS materials may be purchased exclusively from J.J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.
16.3. Text of Risk phrases in Section 3	None.
16.4. Text of Hazard statements in Section 3	H226 – Flammable liquid and vapor. H304 – May be fatal if swallowed and enters airways. H315 – Causes skin irritation. H319 – Causes serious eye irritation. H332 – Harmful if inhaled. H335 – May cause respiratory irritation. H341 – Suspected of causing genetic defects. H351 – Suspected of causing cancer. H360 – May damage fertility or the unborn child. H370 – Causes damage to organs (CNS) by inhalation. H372 – Causes damage to organs (Liver, CNS, Hearing organ, Visual organ) through prolonged or repeated exposure by inhalation. H401 – Toxic to aquatic life.
16.5. Notice to Reader	The information provided herein was believed by Denso North America ("Denso") to be accurate at the time of preparation and prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Denso are subject to Denso's

terms and conditions of sale. DENSO MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MECHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY DENSO, except that the product shall conform to Denso's specifications. Nothing contained herein constitutes an offer for the sale of any product.

16.6. Key/Legend to abbreviations and acronyms used in the safety data sheet

ACGIH	American Conference Government Industrial Hygienists
AICS	Australia, Inventory of Chemical Substances
DSL	Canada, Domestic Substances List
NDSL	Canada, Non-Domestic Substances List
CAS	Chemical Abstract Service
CNS	Central Nervous System
EC50	Effective Concentration 50%
EGEST	EOSCA Generic Exposure Scenario Tool
EOSCA	European Oilfield Specialty Chemicals Association
EINECS	European Inventory of Existing Chemical Substances
ENCS	Japan, Inventory Existing and New Chemical Substances
GHS	Global Harmonization System
IDLH	Immediately Dangerous to Life or Health Concentrations
IARC	International Agency for Research on Cancer
IC50	Inhibition Concentration 50%
IECSC	Inventory of Existing Chemical Substances in China
KECI	Korea, Existing Chemical Inventory
LC50	Lethal Concentration 50%
LD50	Lethal Dose 50%
LOAEL	Lowest Observed Adverse Effect Level
MAK	Germany Maximum Concentration Values
N/A	Not Applicable
ND	Not Determined
NFPA	National Fire Protection Agency
NIOSH	National Institute for Occupational Safety & Health
NOAEL	No Observable Adverse Effect Level
NOEC	No Observed Effect Concentration
NTP	National Toxicology Program
NZIoC	New Zealand Inventory of Chemicals
OSHA	Occupational Safety & Health Administration
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory Commercial Chemical Substances
PRNT	Presumed Not Toxic
RCRA	Resource Conservation Recovery Act
SARA	Superfund Amendments and Reauthorization Act
STEL	Short-Term Exposure Limit
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological

	Materials WHMIS Workplace Hazardous Materials Information System
16.7. Prepared by	Denso EH & S Department
16.8. Telephone	1-281-821-3355 Corporate 1-801-629-0667 Emergency (24 hour)

SAFETY DATA SHEET

According to 29 CFR 1910.1200(g)

PROTAL 7125 PART B (HARDENER)

SECTION 1: Identification of the substance/mixture and of the company/undertaking	
1.1. Product identifier	
Product name	Protal 7125 Part B (Hardener)
1.2. Relevant identified uses of the substance or mixture and uses advised against	
Product Use	Industrial use as a protective coating in prevention of corrosion.
Restricted Use	Not intended for use by general public.
1.3. Details of the supplier of the safety data sheet	
Company	Denso North America
Address	9747 Whithorn Drive Houston, TX 77095
Web	www.densona.com
Telephone	1 (281) 821-3355
Fax	1 (281) 821-0304
Email	info@densona.com
1.4. Emergency telephone number	
Emergency telephone number (24 Hour)	1-801-629-0667

SECTION 2: Hazards Identification	
2.1. Classification of the substance or mixture	
2.1.1. Health	Organic Peroxide – Category E Eye Irritant – Category 2 Skin Sensitizer – Category 1
2.1.2. Environmental	Acute Aquatic Toxicity – Category 1
2.1.3. Physical	None
2.2. Label elements	
Hazard pictograms	
Signal Word	**Warning**
Hazard statement	H242 – Heating may cause a fire. H317 – May cause an allergic skin reaction. H319 – Causes serious eye irritation. H400 – Very toxic to aquatic life.

Precautionary Statement: Prevention	P102 – Keep out of reach of children. P202 – Do not handle until all safety precautions have been read and understood P220 – Keep/Store away from clothing, strong acids/bases, heavy metal salts and other reducing substances/combustible materials. P233 – Keep container tightly closed. P234 – Keep only in original container. P235 – Store in a well ventilated place. Keep cool. P262 – Do not get in eyes, on skin, or on clothing. P264 – Wash thoroughly after handling. P270 – Do not eat, drink, or smoke when using this product. P272 – Contaminated work clothing should not be allowed out of the workplace. P273 – Avoid release to the environment. P280 – Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary Statement: Response	P301+P310 – IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician. P302+P352 – IF ON SKIN: Wash with plenty of soap and water. P303+P361+P353 – IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. P305+P351+P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P314 – Get medical advice / attention if you feel unwell. P333+P313 – If skin irritation or rash occurs: Get medical advice/attention. P337+P313 – If eye irritation persists: Get medical advice/attention. P363 – Wash contaminated clothing before reuse. P391 – Collect spillage.
Precautionary Statement: Disposal	P501 – Dispose of contents/container in accordance with local/regional/national/ international regulations.

SECTION 3: Composition/information on ingredients

3.1. Substances

Chemical Name	CAS No.	Concentration (%w/w)	Classification
Dibenzoyl Peroxide	94-36-0	15-30%	Org Perox B; H241 Eye Irr 2; H319 Skin Sens 1; H317 Aqua Acute 1; H400
Diisononyl phthalate	28553-12-0	20-40%	None
Soda Lime Borosilicate Glass	65997-17-3	1-15%	(1)

NOTES:
(1) Substance with a workplace exposure limit.
(2) Product is a paste. Dibenzoyl peroxide is a solid dispersed within the paste.

SECTION 4: First aid measures

4.1. General advice	Seek medical advice. If breathing has stopped or is labored, give assisted respirations. Supplemental oxygen may be indicated. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation immediately.

4.2. Eye contact	Immediately flush eyes with plenty of water for at least 15 minute, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Get medical attention.
4.3. Skin contact	Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse. For contact with hot product, flush contaminated skin with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting or gauze. Get medical attention immediately.
4.4. Ingestion	Wash out mouth with water. Remove dentures, if any. Move exposed person to fresh air. Keep person warm and at rest. If material has been swallowed and the exposure person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
4.5 Inhalation	Move exposed person to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt, or waistband.

4.6. Most important symptoms and effects, both acute and delayed

Eye contact	Causes serious eye irritation. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.
Skin contact	May cause allergic skin reaction or sensitization. Symptoms may include itching, redness, edema, and drying of the skin.
Ingestion	May cause abdominal pain, nausea, vomiting, or diarrhea.
Inhalation	Unlikely to produce symptoms or effects under normal conditions.

SECTION 5: Firefighting measures

5.1. Suitable extinguishing media	Alcohol-resistant foam, Carbon dioxide (CO2), Dry chemical, or water spray. Do not use a solid water stream as it may scatter and spread fire.

5.2. Specific hazards	Decomposition products may include the following materials: carbon oxides. Downwind personnel must be evacuated. Burning produces noxious and toxic fumes.
5.3. Special protective equipment for fire-fighters	Avoid contact with skin. Fire-fighters should wear appropriate personal protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.
5.4. Further information	Do not allow run-off from fire-fighting to enter drains or water courses. Keep product away from heat sources.

SECTION 6: Accidental release measures

6.1. Personal precautions	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled materials. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
6.2. Environmental precautions	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains, and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
6.3. Methods for cleaning up	Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Use absorbent with inert material. Vacuum or sweep up material and place in a designated, labeled water container. Dispose of via a licensed, waste-disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.
6.4. Additional advice	Stop leak if without risk.

SECTION 7: Handling and storage

7.1. Handling	Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking or smoking. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container. Keep product away from heat sources.
7.2. Storage	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep aware from heat. Keep

	container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.
7.3. Technical precautions	Do not store in reactive metal containers.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.1.1. Exposure Limit Values

CAS No.	ACGIH TLV
94-36-0	5 mg/m^3
28553-12-0	None
65997-17-3	10 mg/m^3 (dust, Manufacturer determined)

8.2. Control measures / Personal Protection

8.2.1. Recommended monitoring procedures	To meet the exposure limits for the materials listed above, personal workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.
8.2.2. Engineering measures	Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
8.2.3. Hygiene measures	Wash hands, forearms, and face after handling chemical products, before eating, smoking or using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing or discard as necessary. Ensure that eyewash stations/bottles with pure water and safety showers are close to the workstation location.
8.2.4. Respiratory protection	Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. Select equipment to provide protection from the ingredients in Section 3 of this document.
8.2.5. Eye protection	Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. This may include, but is not limited to, safety glasses, goggles and face shields.
8.2.6. Skin protection	Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. This equipment may include, but is not limited to, impervious

	gloves, gauntlets, impervious shoes/boots, and protective clothing. The breakthrough time of the selected protective glove(s), shoes and clothing must be greater than the intended use period.
8.2.7. Environmental exposure controls	Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels. Environmental exposure controls may also include dikes or other liquid containment devices.

SECTION 9: Physical and chemical properties

Form	Paste	Vapor Pressure	ND
Color	Black	Relative vapor density	>1
Odor	Mild	Relative density	0.99
Odor threshold	ND	Water solubility	Slight
pH	about 7	Partition coefficient (n-octanol/water)	ND
Freezing point	ND	Auto-ignition temperature	ND
Boiling point	ND	Decomposition temperature	ND
Flash Point	ND	Viscosity	15,000 cP @ 73°F (22°C)
Evaporation rate	N/A	Oxidizing	N/A
Flammable Limits	ND	Explosion Limits	ND

SECTION 10: Stability and reactivity

10.1 Stability	The product is stable. Under normal conditions of storage and use, hazardous polymerization/decomposition will not occur.
10.2. Conditions to avoid	Avoid heat, open flames, direct sunlight, prolonged storage above 100oF (38oC), and contamination from incompatible materials.
10.3. Materials to avoid	Reactive or incompatible with the following materials: Strong acids and bases, heavy metals and heavy metal salts, reducing agents, avoid impurities (e.g. rust, dust, ash) – risk of decomposition.
10.4. Other hazards	Reacts with considerable heat release.
10.5. Hazardous decomposition products	Decomposition products may include the following materials: Carbon oxides; Irritating, caustic, flammable, noxious/toxic gases, vapors, or fumes can develop.

SECTION 11: Toxicological information

11.1. Acute health hazard

Product:

Acute oral toxicity:	ND	
Acute dermal toxicity:	ND	

Components:

94-36-0

Acute oral toxicity:	LD50 (rat):	>5,000 mg/kg
Acute dermal toxicity:	LD50 (rabbit):	ND

	Acute inhalation toxicity: LC50 (rat): 24.3 mg/L – 4 h 28553-12-0 Acute oral toxicity: LD50 (rat): ND Acute dermal toxicity: LD50 (rabbit): ND 65997-17-3 Acute oral toxicity: LD50 (rat): >2,000 mg/kg (estimated) Acute dermal toxicity: LD50 (rabbit): >5,000 mg/kg (estimated)
11.2. Skin corrosion or irritation	**Product:** No data available, but likely not to be irritating or corrosive to skin based on components present. **Components:** 94-36-0 adult rabbit No skin irritation or corrosion 28553-12-0 None known. 65997-17-3 None known.
11.3. Serious eye damage or irritation	**Product:** No data available, but likely to cause severe eye irritation based on components present. **Components:** 94-36-0 rabbit Irritation to eyes, reversing within 21 days Method: OECD Test Guideline 405 28553-12-0 None known. 65997-17-3 None known.
11.4. Respiratory or skin sensitization	**Product:** No data available, but may cause skin sensitization in susceptible persons based on components. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis. **Components:** 94-36-0 mouse May causes skin sensitization by skin contact. Method: OECD Test Guideline 429 28553-12-0 None known. 65997-17-3 None known.
11.5. Germ cell mutagenicity	**Product:** No data available, but not likely to be mutagenic based on components. **Components:** 94-36-0 Salmonella typhimurium Negative Method: OECD Test Guideline 471 28553-12-0 Classification not possible 65997-17-3 Remarks: Some positive data exist, but the data are not sufficient for classification.
11.6. Carcinogenicity	**Product:** No data available. **Components:** 94-36-0

	Result: Animal testing did not show any carcinogenic effects. 28553-12-0 Remarks: Classification not possible 65997-17-3 Remarks: Some positive data exist, but the data are not sufficient for classification. Remarks: None of the components is classified as a carcinogen.
11.7. Reproductive toxicity	**Product:** No data available, but not likely to be classifiable as a reproductive toxin based on components. **Components:** None of the components is known to have significant reproductive effects.
11.8. STOT – single exposure	**Product:** No data available, but irritation and/or sensitization to skin and eyes are likely– Skin, Eyes. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis. **Components:** No data available. See Sections 11.2, 11.3, and 11.4 for specific information regarding the effects of the components.
11.9. STOT – repeated exposure	**Product:** No data available, but, based on components, may cause irritation and/or sensitization to skin and eyes are likely - Skin, Eyes. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis.
11.10. Repeated dose toxicity	**Product:** No data available, but, based on components, causes eye irritation and skin sensitization. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. May aggravate pre-existing skin conditions like dermatitis.
11.11. Aspiration toxicity	**Product:** Not determined. **Components:** Not determined.
11.12. Further information	Likely routes of exposure – skin and eye contact.

SECTION 12: Ecological information

12.1. Ecotoxicity

Product: No data available, but likely to be very toxic to aquatic life based on components present.

Components:

94-36-0

Toxicity to fish – 96 h	LC50: 0.06 mg/L	Species: Rainbow trout
Toxicity to daphnia and other aquatic invertebrates – 48 h	LC50: 0.11 mg/L	
Toxicity to algae – 72 h	LC50: 0.07 mg/L	Species: Green algae
Toxicity to bacteria – 30 m	EC50: 35 mg/L	Species: Activated sludge

	28553-12-0	No data available.	
	65997-17-3	No data available.	
12.2. Persistence and degradability	**Product:** No data available		
	Components:		
	94-36-0	Biodegradable	Biodegradation: 68% - 28 d Method: OECD Test Guideline 301D
	28553-12-0	No data available.	
	65997-17-3	No data available.	
12.3. Bioaccumulative potential	**Product:** No data available **Components:** Not determined.		
12.4. Mobility in soil	**Product:** Not determined. **Components:** Not determined.		
12.5. Other adverse effects	**Product:** Not determined. An environmental hazard cannot be excluded in the event of unprofessional handling or disposal, toxic to aquatic life. **Components:** No data available		

SECTION 13: Disposal considerations

13.1. Waste disposal

The generation of waste should be avoided or minimized wherever possible. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Avoid disposal of spilled material and runoff and contaminated soils in waterways, drains or sewers. Dispose of contaminated containers, soils, etc. in compliance with the requirements of environmental protection and waste disposal legislation and any regional and local authority requirements. Empty any remaining contents from packaging prior to disposal and dispose of as unused product. Do not reuse empty containers.

SECTION 14: Transport information

14.1. UN number

UN3108

14.2. UN proper shipping name

ORGANIC PEROXIDE TYPE E, SOLID (DIBENZOYL PEROXIDE)

14.3. Transport hazard class		
International Carriage of Dangerous Good by Road/Rail	ADR/RID:	5.2
International Maritime Dangerous Goods	IMDG:	5.2
International Air Transport Association	IATA:	5.2
US Code of Federal Regulations	CFR	5.2
Canadian Transportation of Dangerous Goods	TDG:	5.2
US Department of Transportation	DOT:	5.2
14.4. Packing group	II	
14.5. Environmental hazards	Environmental hazards: Yes	Marine pollutant: Yes
	IMDG	
	EmS Code:	F-J S-R
	IATA	
	Packing Instruction (Cargo):	570 Maximum quantity: 25 kg
	Packing instruction (Passenger):	570 Maximum quantity: 10 kg

SECTION 15: Regulatory information

15.1. OSHA Hazards	Organic Peroxide, Sensitizer, Irritant
15.2. CERCLA Reportable Quantity	Components CAS No. Component RQ Product RQ None
15.3. SARA 314 Extremely Hazardous Substances Reportable Quantity	This material does not contain any components with a section 314 Extremely Hazardous Substances RQ.
15.4. SARA 311/312 Hazards	Reactivity hazard, Acute health hazard
15.5. SARA Title III, Section 302 Reporting	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
15.6. SARA Title III, Section 313 Reporting	The following chemicals in this material are subject to the reporting requirements of SARA Title III, Section 313: Dibenzoyl peroxide 94-36-0
15.7. Clean Air Act	The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61): None.

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489): None.

15.8. Clean Water Act

The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 116.4A: None.

The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 117.3: None.

This product contains the following toxic pollutants listed under the U.S. Clean Water Act, Section 307: None.

15.9. US State Regulations

Massachusetts Right-To-Know

Dibenzoyl peroxide	94-36-0

Pennsylvania Right-To-Know

Dibenzoyl peroxide, Diisononyl phthalate	94-36-0, 28553-12-0

New Jersey Right-To-Know

Dibenzoyl peroxide, Diisononyl phthalate	94-36-0, 28553-12-0

California Prop 65

WARNING! This product contains a chemical known to the State of California to cause cancer. Diisononyl phthalate 28553-12-0

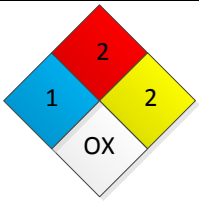
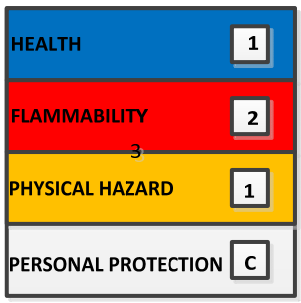
15.10. International Chemical Inventory Listing

TSCA (US)	Yes (All components of this product are on US inventory)
DSL (Canada)	Yes (All components of this product are on Canadian inventory)
AICS (Australia)	Yes (On Australian inventory or in compliance with inventory)
ICS (New Zealand)	Yes (On New Zealand inventory or in compliance with inventory)
ENCS (Japan)	Yes (On Japanese inventory or in compliance with inventory)
ISHL (Japan)	Yes (On Japanese inventory or in compliance with inventory)
KECI (Korea)	Yes (On Korean inventory or in compliance with inventory)
PICCS (Philippines)	Yes (On Philippine inventory or in compliance with inventory)
IECSC (China)	Yes (On Chinese inventory or in compliance with inventory)

15.11. WHMIS Hazard Classification (Canada)

Class D-2B:	Material causing other toxic effects (Toxic).
Class C:	Oxidizing material.
Canadian NPRI:	None required.

SECTION 16: Other information

16.1. NFPA	
16.2. HMIS®	 Caution: HMIS ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. Although HMIS ratings are not required on SDS's under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS ratings are to be used with a fully implemented HMIS program. HMIS is a registered mark of the National Paint & Coatings Association (NPCA). HMIS materials may be purchased exclusively from J.J. Keller (800) 327-6868. The customer is responsible for determining the PPE code for this material.
16.3. Text of Risk phrases in Section 3	None.
16.4. Text of Hazard statements in Section 3	H242 – Heating may cause a fire. H317 – May cause an allergic skin reaction. H319 – Causes serious eye irritation. H400 – Very toxic to aquatic life.
16.5. Notice to Reader	The information provided herein was believed by Denso North America ("Denso") to be accurate at the time of preparation and prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by Denso are subject to Denso's terms and conditions of sale. DENSO MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MECHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY DENSO, except that the product shall conform to Denso's specifications. Nothing contained herein constitutes an offer for the sale of any product.
16.6. Key/Legend to abbrevations and acronyms used in the safety data sheet	ACGIH American Conference Government Industrial Hygienists ADR European Agreement for International Carriage of Dangerous Materials Road AICS Australia, Inventory of Chemical Substances

DSL	Canada, Domestic Substances List
NDSL	Canada, Non-Domestic Substances List
CAS	Chemical Abstract Service
CNS	Central Nervous System
DOT	Department of Transportation
EC50	Effective Concentration 50%
EGEST	EOSCA Generic Exposure Scenario Tool
EOSCA	European Oilfield Specialty Chemicals Association
EINECS	European Inventory of Existing Chemical Substances
ENCS	Japan, Inventory Existing and New Chemical Substances
GHS	Global Harmonization System
HMIS	Hazardous Materials Identification System
IDLH	Immediately Dangerous to Life or Health Concentrations
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IC50	Inhibition Concentration 50%
IECSC	Inventory of Existing Chemical Substances in China
IMDG	International Maritime Dangerous Goods
KECI	Korea, Existing Chemical Inventory
LC50	Lethal Concentration 50%
LD50	Lethal Dose 50%
LOAEL	Lowest Observed Adverse Effect Level
MAK	Germany Maximum Concentration Values
N/A	Not Available
ND	Not Determined
NFPA	National Fire Protection Agency
NIOSH	National Institute for Occupational Safety & Health
NOAEL	No Observable Adverse Effect Level
NOEC	No Observed Effect Concentration
NTP	National Toxicology Program
NZIoC	New Zealand Inventory of Chemicals
OSHA	Occupational Safety & Health Administration
PEL	Permissible Exposure Limit
PICCS	Philippines Inventory Commercial Chemical Substances
PRNT	Presumed Not Toxic
RCRA	Resource Conservation Recovery Act
RID	European Agreement for International Carriage of Dangerous Materials Rail
RQ	Reportable Quantity
SARA	Superfund Amendments and Reauthorization Act
STEL	Short-Term Exposure Limit
TDG	Transportation of Dangerous Goods (Canada)
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials

	WHMIS Workplace Hazardous Materials Information System
16.7. Prepared by	Denso EH & S Department
16.8. Telephone	1-281-821-3355 Corporate 1-801-629-0667 Emergency (24 hour)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

* 1 Identification of the substance/mixture and of the company/undertaking

Product identifier Powercrete R 95 Part A

Trade name: Powercrete R 95 Part A

Relevant identified uses of the substance or mixture and uses advised against

Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Application of the substance / the mixture Epoxy resin

Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Seal For Life Industries LLC - Powercrete
103 J.L. Farmer Road, Franklin, KY 42134, USA
Tel. (+1) 508-918-1600, Fax. (+1) 508-918-1910, Email: franklin@sealforlife.com

Information department: Product safety department of manufacturer / supplier

Emergency telephone number:

For emergency assistance call CHEMTREC (24 hours):
Within USA/Canada 1-800-424-9300; Outside USA/Canada +1 703-527-3887 (collect calls accepted)

* 2 Hazard(s) identification

Classification of the substance or mixture

GHS08 Health hazard

Carc. 2 H351 Suspected of causing cancer.

GHS09 Environment

Aquatic Chronic 2 H411 Toxic to aquatic life with long lasting effects.

GHS07

Skin Irrit. 2 H315 Causes skin irritation.
Eye Irrit. 2A H319 Causes serious eye irritation.
Skin Sens. 1 H317 May cause an allergic skin reaction.

Label elements

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

GHS07 GHS08 GHS09

Signal word Warning

Hazard-determining components of labeling:

Bisphenol F, reaction product with epichlorohydrin
titanium dioxide

Hazard statements

Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.

(Contd. on page 2)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part A

(Contd. of page 1)

Suspected of causing cancer.
Toxic to aquatic life with long lasting effects.

Precautionary statements
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wear protective gloves/protective clothing/eye protection/face protection.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see on this label).
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)

Health = 1
Fire = 1
Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = 1
Fire = 1
Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not available.

vPvB: Not available.

* 3 Composition/information on ingredients

Chemical characterization: Mixtures

Description: Mixture of the substances listed below with nonhazardous additions.

Dangerous components:		
28064-14-4	Bisphenol F, reaction product with epichlorohydrin Aquatic Chronic 2, H411; Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; H401	25-50%
12001-26-2	Mica	5.0-10%
471-34-1	calcium carbonate	5.0-10%
7727-43-7	barium sulphate, natural	2.5-5.0%

SVHC None.

* 4 First-aid measures

Description of first aid measures

General information: Personal protection for the First Aider.

After inhalation:
Take affected persons into fresh air and keep quiet.
In case of unconsciousness place patient stably in side position for transportation.
Supply fresh air or oxygen; call for doctor.
Do not use mouth to mouth or mouth to nose resuscitation.

After skin contact:
Flush immediately with plenty of water
Remove contaminated clothing
Seek medical treatment.

(Contd. on page 3)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part A

(Contd. of page 2)

After eye contact:
Rinse opened eye for several minutes under running water.
Remove any contact lenses
Seek medical treatment.
After swallowing:
Rinse mouth with water
Never give anything by mouth if victim is rapidly losing consciousness, unconscious or convulsing
Do not induce vomiting; immediately call for medical help.
Most important symptoms and effects, both acute and delayed No further relevant information available.
Indication of any immediate medical attention and special treatment needed
No further relevant information available.

* 5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents:
CO_2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
Special hazards arising from the substance or mixture
Formation of toxic gases is possible during heating or in case of fire.
In case of fire, the following can be released:
Carbon monoxide (CO)
Carbon dioxide (CO_2)
Advice for firefighters
Protective equipment:
Wear self-contained respiratory protective device.
Wear fully protective suit.

* 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Remove persons from danger area.
Ensure adequate ventilation
Wear protective clothing.
Use respiratory protective device against the effects of fumes/dust/aerosol.
Environmental precautions:
Do not allow to enter sewers/ surface or ground water.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to penetrate the ground/soil.
In case of seepage into the ground inform responsible authorities.
Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

* 7 Handling and storage

Precautions for safe handling
Work only in fume cabinet.
At all times avoid inhalation of the product and contact with skin and eyes
Information about protection against explosions and fires: Keep ignition sources away - Do not smoke.

Conditions for safe storage, including any incompatibilities
Storage:
Requirements to be met by storerooms and receptacles:
Store only in the original receptacle.

(Contd. on page 4)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part A

(Contd. of page 3)

Prevent any seepage into the ground.
Provide floor trough without outlet.

Information about storage in one common storage facility:
Do not store together with oxidizing and acidic materials.

Further information about storage conditions:
Keep receptacle tightly sealed.
Store in a dry, cool, well ventilated place
Protect from heat and direct sunlight.

Specific end use(s) No further relevant information available.

*
8 Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

Control parameters

Components with limit values that require monitoring at the workplace:	
12001-26-2 Mica	
PEL	Long-term value: 20 mppcf ppm <1% crystalline silica
REL	Long-term value: 3* mg/m³ *respirable dust; containing < 1% quartz
TLV	Long-term value: 3* mg/m³ *as respirable fraction
471-34-1 calcium carbonate	
PEL	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV	TLV withdrawn
7727-43-7 barium sulphate, natural	
PEL	Long-term value: 15* 5** mg/m³ *total dust **respirable fraction
REL	Long-term value: 10* 5** mg/m³ *total dust **respirable fraction
TLV	Long-term value: (10) NIC-5* mg/m³ *inhalable fraction

Additional information: The lists that were valid during the creation were used as basis.

Exposure controls

Personal protective equipment:

General protective and hygienic measures:
Do not eat, drink, smoke or sniff while working.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Be sure to clean skin thoroughly after work and before breaks.
Avoid contact with the eyes and skin.
Do not inhale gases / fumes / aerosols.

Breathing equipment:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use selfcontained respiratory protective device.

Protection of hands:

Protective gloves

(Contd. on page 5)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part A

(Contd. of page 4)

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles

Body protection: Impervious protective clothing

*
9 Physical and chemical properties

Information on basic physical and chemical properties	
General Information	
Appearance:	
Form:	Viscous
Color:	Grey
Odor:	Characteristic
Odour threshold:	Not determined.
pH-value:	Not determined.
Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	Undetermined.
Flash point:	94 °C (201 °F)
Flammability (solid, gaseous):	Not applicable.
Ignition temperature:	Not determined.
Decomposition temperature:	Not determined.
Auto igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor pressure:	Not determined.
Density at 20 °C (68 °F):	1.73 g/cm³ (14.437 lbs/gal)
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with	
Water:	Not miscible or difficult to mix.
Segregation coefficient (n-octanol/water):	Not determined.

(Contd. on page 6)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part A

(Contd. of page 5)

Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Solvent content:	
Organic solvents:	0.0 %
Other information	The material polymerizes to 100% solids, after mixing and reaction with the corresponding "Part B" of the product.

* 10 Stability and reactivity

Reactivity
Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
Possibility of hazardous reactions Reacts with strong oxidizing agents.
Conditions to avoid No further relevant information available.
Incompatible materials:
Reacts with strong acids.
Strong oxydizing agents
Hazardous decomposition products:
Carbon monoxide
Carbon dioxide

* 11 Toxicological information

Information on toxicological effects
Acute toxicity:

LD/LC50 values that are relevant for classification:		
28064-14-4 Bisphenol F, reaction product with epichlorohydrin		
Oral	LD50	>2000 mg/kg (rat)
Dermal	LD50	>2000 mg/kg (rabbit)

Primary irritant effect:
on the skin: Irritant to skin and mucous membranes.
on the eye: Irritating effect.
Sensitization: Sensitization possible through skin contact.
Additional toxicological information:
The product shows the following dangers according to internally approved calculation methods for preparations:
Irritant

Carcinogenic categories

IARC (International Agency for Research on Cancer)		
13983-17-0	Natural wollastonite	3
13463-67-7	titanium dioxide	2B
14808-60-7	Quartz (SiO2)	1

NTP (National Toxicology Program)		
14808-60-7	Quartz (SiO2)	K

OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients is listed.

(Contd. on page 7)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part A

(Contd. of page 6)

* 12 Ecological information

Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability No further relevant information available.
Bioaccumulative potential No further relevant information available.
Mobility in soil No further relevant information available.
Ecotoxical effects:
Remark: Toxic for fish
Additional ecological information:
General notes:
Water hazard class 2 (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Danger to drinking water if even small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms
Results of PBT and vPvB assessment
PBT: Not available.
vPvB: Not available.
Other adverse effects No further relevant information available.

* 13 Disposal considerations

Waste treatment methods
Recommendation:
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
Dispose safely in accordance with local and national legislations

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.

* 14 Transport information

UN-Number	
DOT, ADR, IMDG, IATA	UN3082
UN proper shipping name	
DOT	- (Not regulated for transport) Environmentally hazardous substances, liquid, n.o.s.
ADR	3082 Environmentally hazardous substances, liquid, n.o.s. (Bisphenol F, reaction product with epichlorohydrin)
IMDG	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bisphenol F, reaction product with epichlorohydrin), MARINE POLLUTANT
IATA	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bisphenol F, reaction product with epichlorohydrin)
Transport hazard class(es)	
DOT, ADR, IMDG, IATA	
Class	9 Miscellaneous dangerous substances and articles

(Contd. on page 8)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part A

(Contd. of page 7)

Label	9
Packing group	
ADR, IMDG, IATA	III
Environmental hazards:	Product contains environmentally hazardous substances: Bisphenol F, reaction product with epichlorohydrin
Marine pollutant:	Yes Symbol (fish and tree)
Special marking (ADR):	Symbol (fish and tree)
Special marking (IATA):	Symbol (fish and tree)
Special precautions for user	Warning: Miscellaneous dangerous substances and articles
Danger code (Kemler):	90
EMS Number:	F-A,S-F
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
DOT	
Remarks:	Special marking with the symbol (fish and tree).
UN "Model Regulation":	UN3082, Environmentally hazardous substances, liquid, n.o.s. (Bisphenol F, reaction product with epichlorohydrin), 9, III

* 15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
Sara

Section 355 (extremely hazardous substances):

None of the ingredients is listed.

Section 313 (Specific toxic chemical listings):

None of the ingredients is listed.

TSCA (Toxic Substances Control Act):

28064-14-4	Bisphenol F, reaction product with epichlorohydrin
1317-65-3	Calcium carbonate
471-34-1	calcium carbonate
7727-43-7	barium sulphate, natural
13463-67-7	titanium dioxide
7440-44-0	carbon
14808-60-7	Quartz (SiO2)

Proposition 65

Chemicals known to cause cancer:

14808-60-7	Quartz (SiO2)

Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males:

None of the ingredients is listed.

Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

(Contd. on page 9)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part A

(Contd. of page 8)

Carcinogenic categories

EPA (Environmental Protection Agency)		
7727-43-7	barium sulphate, natural	D, CBD(inh), NL(oral)

TLV (Threshold Limit Value established by ACGIH)		
13463-67-7	titanium dioxide	A4
14808-60-7	Quartz (SiO2)	A2

NIOSH-Ca (National Institute for Occupational Safety and Health)	
13463-67-7	titanium dioxide
14808-60-7	Quartz (SiO2)

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

GHS07 GHS08 GHS09

Signal word Warning

Hazard-determining components of labeling:
Bisphenol F, reaction product with epichlorohydrin
titanium dioxide

Hazard statements
Causes skin irritation.
Causes serious eye irritation.
May cause an allergic skin reaction.
Suspected of causing cancer.
Toxic to aquatic life with long lasting effects.

Precautionary statements
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Avoid breathing dust/fume/gas/mist/vapours/spray.
Wear protective gloves/protective clothing/eye protection/face protection.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see on this label).
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS: Product safety department

Contact:
Seal For Life Technologies & Services B.V.
Gasselterstraat 20, 9503JB Stadskanaal, the Netherlands
Tel: +31 599 696 170; Fax. +31 599 696 177; Email: info@sealforlife.com

Date of preparation / last revision 07/08/2014 / 1

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists

(Contd. on page 10)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 2 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part A

(Contd. of page 9)

EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation, Hazard Category 2A
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Carc. 2: Carcinogenicity, Hazard Category 2
: Hazardous to the aquatic environment - AcuteHazard, Category 2
Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2

*** Data compared to the previous version altered.**

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

1 Identification of the substance/mixture and of the company/undertaking

Product identifier Powercrete R 95 Part B

Trade name: Powercrete R 95 Part B

Relevant identified uses of the substance or mixture and uses advised against

Sector of Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

Application of the substance / the mixture Epoxy curing agent

Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Seal For Life Industries LLC - Powercrete
25 Forge Parkway, Franklin, MA, 02038 USA
Tel. (+1) 800-343-7875, Fax. (+1) 800-328-4822, Email: franklin@sealforlife.com

Information department: Product safety department of manufacturer / supplier

Emergency telephone number:

For emergency assistance call CHEMTREC (24 hours):
Within USA/Canada 1-800-424-9300; Outside USA/Canada +1 703-527-3887 (collect calls accepted)

*

2 Hazard(s) identification

Classification of the substance or mixture

GHS06 Skull and crossbones

Acute Tox. 3	H331	Toxic if inhaled.

GHS08 Health hazard

Resp. Sens. 1	H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Repr. 2	H361	Suspected of damaging fertility or the unborn child.
STOT SE 1	H370-H371	Causes damage to the skin, the respiratory system, the digestive system and the stomach. Route of exposure: Oral, Inhalative, Dermal. May cause damage to the central nervous system and the lung.
STOT RE 2	H373	May cause damage to organs through prolonged or repeated exposure.

GHS05 Corrosion

Skin Corr. 1A	H314	Causes severe skin burns and eye damage.

GHS09 Environment

Aquatic Chronic 2	H411	Toxic to aquatic life with long lasting effects.

GHS07

Acute Tox. 4	H302	Harmful if swallowed.
Skin Sens. 1	H317	May cause an allergic skin reaction.

Label elements

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

(Contd. on page 2)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 1)

Hazard pictograms

GHS05 GHS06 GHS08 GHS09

Signal word Danger

Hazard-determining components of labeling:
Alkyl phenol (Proprietary)
Alkyl ether amine (Proprietary)
4-nonylphenol, branched
Aliphatic amine (Proprietary)

Hazard statements
Harmful if swallowed.
Toxic if inhaled.
Causes severe skin burns and eye damage.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.
Causes damage to the skin, the respiratory system, the digestive system and the stomach. Route of exposure: Oral, Inhalative, Dermal. May cause damage to the central nervous system and the lung.
May cause damage to organs through prolonged or repeated exposure.
Toxic to aquatic life with long lasting effects.

Precautionary statements
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not breathe dust/fume/gas/mist/vapours/spray.
In case of inadequate ventilation wear respiratory protection.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

NFPA ratings (scale 0 - 4)

Health = 3
Fire = 1
Reactivity = 0

HMIS-ratings (scale 0 - 4)

Health = *3
Fire = 1
Reactivity = 0

Other hazards

Results of PBT and vPvB assessment

PBT: Not available.

vPvB: Not available.

*
3 Composition/information on ingredients

Chemical characterization: Mixtures

Description: Mixture of the substances listed below with nonhazardous additions.

(Contd. on page 3)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 2)

	Dangerous components:	
	Alkyl phenol (Proprietary) Acute Tox. 3, H331; Resp. Sens. 1, H334; STOT SE 1, H370-H371-H335-H336; STOT RE 2, H373; Skin Corr. 1A, H314; Eye Dam. 1, H318; Aquatic Chronic 2, H411; Skin Sens. 1, H317; H401	10-25%
	Alkyl ether amine (Proprietary) Resp. Sens. 1, H334; STOT SE 1, H370-H371-H335-H336; STOT RE 2, H373; Skin Corr. 1A, H314; Eye Dam. 1, H318; Acute Tox. 4, H302; Skin Sens. 1, H317	10-25%
98-54-4	4-tert-butylphenol Eye Dam. 1, H318; Aquatic Chronic 1, H410; Skin Irrit. 2, H315; STOT SE 3, H335; H401	10-25%
	Cycloaliphatic amines Resp. Sens. 1, H334; STOT SE 1, H370-H371-H335; Skin Corr. 1A, H314; Eye Dam. 1, H318; Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332	10-25%
	Aliphatic amine (Proprietary) Acute Tox. 2, H330; Resp. Sens. 1, H334; STOT SE 1, H370-H371-H335-H336; STOT RE 2, H373; Skin Corr. 1A, H314; Eye Dam. 1, H318; Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Sens. 1, H317	5.0-10%
1761-71-3	4,4'-methylenebis(cyclohexylamine) STOT RE 2, H373; Skin Corr. 1A, H314; Eye Dam. 1, H318; Aquatic Chronic 2, H411; Acute Tox. 4, H302; Skin Sens. 1, H317; H401	5.0-10%
111-40-0	2,2'-iminodiethylamine Acute Tox. 2, H330; Skin Corr. 1B, H314; Acute Tox. 4, H302; Acute Tox. 4, H312; Skin Sens. 1, H317; STOT SE 3, H335	2.5-5.0%
84852-15-3	4-nonylphenol, branched Repr. 2, H361; Skin Corr. 1B, H314; Aquatic Acute 1, H400; Aquatic Chronic 1, H410; Acute Tox. 4, H302	2.5-5.0%
	Alkyl amine (Proprietary) Resp. Sens. 1, H334; STOT SE 1, H370-H371-H335-H336; STOT RE 2, H373; Skin Corr. 1A, H314; Eye Dam. 1, H318; Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Sens. 1, H317	2.5-5.0%
100-51-6	Benzyl alcohol Acute Tox. 4, H302; Acute Tox. 4, H332	2.5-5.0%

SVHC None.

*
4 First-aid measures

Description of first aid measures
General information:
Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.
Remove breathing apparatus only after contaminated clothing have been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
After inhalation:
Call a doctor immediately.
Use a respiration bag or breathing device.
Take affected persons into fresh air and keep quiet.
Supply fresh air or oxygen; call for doctor.
In case of unconsciousness place patient stably in side position for transportation.
After skin contact:
Remove contaminated clothing
Flush immediately with plenty of water
Call a doctor immediately.
Cover wound with a sterile dressing.
Immediately wash with water and soap and rinse thoroughly.
After eye contact:
Call a doctor immediately.
Remove any contact lenses

(Contd. on page 4)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 3)

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing:
Rinse mouth with water
Never give anything by mouth if victim is rapidly losing consciousness, unconscious or convulsing
A person vomiting while lying on his/her back should be turned onto his/her side.
Immediately call a doctor.
Drink copious amounts of water and provide fresh air. Immediately call a doctor.

Most important symptoms and effects, both acute and delayed
Headache
Dizziness
Dizziness
Unconsciousness
Coughing
Breathing difficulty
Asthma attacks
Nausea
Gastric or intestinal disorders
Cramp

Indication of any immediate medical attention and special treatment needed
If swallowed or in case of vomiting, danger of entering the lungs.
Medical supervision for at least 48 hours.

* 5 Fire-fighting measures

Extinguishing media

Suitable extinguishing agents:
Foam
Carbon dioxide
Fire-extinguishing powder
Sand
Limestone powder
Use fire fighting measures that suit the environment.

For safety reasons unsuitable extinguishing agents: Water spray

Special hazards arising from the substance or mixture
Nitrogen oxides (NOx)
Carbon monoxide (CO)
Carbon dioxide (CO2)
nitrogen containing compounds

Advice for firefighters

Protective equipment:
Wear self-contained respiratory protective device.
Wear fully protective suit.
Mouth respiratory protective device.

Additional information
Collect contaminated fire fighting water separately. It must not enter the sewage system.
Disposal of fire debris and contaminated fire fighting water in accordance with official regulations.

* 6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective clothing.
Keep people at a distance and stay upwind.
Ensure adequate ventilation
Wear protective equipment. Keep unprotected persons away.

Environmental precautions:
Do not allow to penetrate the ground/soil.
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.

(Contd. on page 5)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 4)

Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

* 7 Handling and storage

Precautions for safe handling
At all times avoid inhalation of the product and contact with skin and eyes
Do not eat, drink or smoke while handling the product
Ensure appropriate ventilation/exhaust at the workplace.
Open and handle receptacle with care.
Prevent formation of aerosols.

Information about protection against explosions and fires: Keep respiratory protective device available.

Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and receptacles:
Store only in the original receptacle.
Provide floor trough without outlet.

Information about storage in one common storage facility:
Store away from oxidizing agents.
Do not store together with reducing agents, heavy-metal compounds, acids and alkalis.

Further information about storage conditions:
Store in a dry, cool, well ventilated place
Keep receptacle tightly sealed.

Specific end use(s) No further relevant information available.

* 8 Exposure controls/personal protection

Additional information about design of technical systems: No further data; see item 7.

Control parameters

Components with limit values that require monitoring at the workplace:	
Aliphatic amine (Proprietary)	
ACGIH TLV	Short-term value: 0.1 mg/m³ (1994-09-01) Ceiling Limit Value
NIOSH REL	Short-term value: 0.1 mg/m³ (1994-06-01) Ceiling Limit Value
OSHA PEL	Short-term value: 0.1 mg/m³ (1989-03-01) Ceiling Limit Value
111-40-0 2,2'-iminodiethylamine	
REL	Long-term value: 4 mg/m³, 1 ppm Skin
TLV	Long-term value: 4.2 mg/m³, 1 ppm Skin
100-51-6 Benzyl alcohol	
WEEL	Long-term value: 10 ppm

Additional information: The lists that were valid during the creation were used as basis.

(Contd. on page 6)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 5)

Exposure controls
Personal protective equipment:
General protective and hygienic measures:
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Store protective clothing separately.
Avoid contact with the eyes and skin.

Breathing equipment:
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use selfcontained respiratory protective device.

Protection of hands:

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves
Recommended material:
Neoprene gloves
Butyl rubber, BR
Nitrile rubber, NBR
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

Penetration time of glove material
The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

Eye protection:

Tightly sealed goggles

Body protection:
Use protective suit.
Impervious protective clothing

* 9 Physical and chemical properties

Information on basic physical and chemical properties	
General Information	
Appearance:	
Form:	Fluid
Color:	Light brown
Odor:	Ammonia-like
Odour threshold:	Not determined.
pH-value:	Not determined.
Change in condition	
Melting point/Melting range:	Undetermined.
Boiling point/Boiling range:	201 °C (394 °F)

(Contd. on page 7)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 6)

Flash point:	101 °C (214 °F)
Flammability (solid, gaseous):	Not applicable.
Ignition temperature:	300 °C (572 °F)
Decomposition temperature:	Not determined.
Auto igniting:	Product is not selfigniting.
Danger of explosion:	Product does not present an explosion hazard.
Explosion limits:	
Lower:	Not determined.
Upper:	Not determined.
Vapor pressure:	Not determined.
Density at 20 °C (68 °F):	1.03 g/cm³ (8.595 lbs/gal)
Relative density	Not determined.
Vapour density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with	
Water:	Not miscible or difficult to mix.
Segregation coefficient (n-octanol/water):	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
Solvent content:	
Organic solvents:	3.1 %
VOC content:	3.1 % 32.4 g/l / 0.27 lb/gl
Other information	No further relevant information available.

10 Stability and reactivity

Reactivity
Chemical stability
Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
Possibility of hazardous reactions
Reacts with acids.
Reacts with oxidizing agents.
Corrosive action on metals.
Reacts with alkaline metals.
Conditions to avoid No further relevant information available.
Incompatible materials:
Reacts with strong acids.
Strong oxydizing agents
Hazardous decomposition products:
Nitrogen oxides
Ammonia
Nitrogen containing compounds
Aldehyde
Flammable gases/vapors

(Contd. on page 8)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 7)

* 11 Toxicological information

Information on toxicological effects

Acute toxicity:

LD/LC50 values that are relevant for classification:		
Alkyl phenol (Proprietary)		
Oral	LD50	>2000 mg/kg (rat)
Dermal	LD50	2288 mg/kg (rabbit)
Inhalative	LC50/4h	5 mg/l (rat)
Alkyl ether amine (Proprietary)		
Oral	LD50	910 mg/kg (rat)
98-54-4 4-tert-butylphenol		
Oral	LD50	2951 mg/kg (rat)
Dermal	LD50	2288 mg/kg (rabbit)
Aliphatic amine (Proprietary)		
Oral	LD50	930 mg/kg (rat)
Dermal	LD50	2000 mg/kg (rabbit)
Inhalative	LC50	3.89 mg/kg (rat) (1h)
	LC50/4h	0.8 mg/l (rat) (female)
1761-71-3 4,4'-methylenebis(cyclohexylamine)		
Oral	LD50	380 mg/kg (rat)
Dermal	LD50	>1000 mg/kg (rabbit)
111-40-0 2,2'-iminodiethylamine		
Oral	LD50	1080 mg/kg (rat)
Dermal	LD50	1090 mg/kg (rabbit)
Inhalative	LC50/4h	0.3 mg/l (rat) (OECD Guideline 403)
84852-15-3 4-nonylphenol, branched		
Oral	LD50	1300 mg/kg (rat)
100-51-6 Benzyl alcohol		
Oral	LD50	1230 mg/kg (rat)
Dermal	LD50	2000 mg/kg (rabbit)
Inhalative	LC50/4h	4178 mg/l (rat)

Primary irritant effect:

on the skin: Strong caustic effect on skin and mucous membranes.

on the eye: Strong caustic effect.

Sensitization:

Sensitization possible through inhalation.
Sensitization possible through skin contact.

Additional toxicological information:

The product shows the following dangers according to internally approved calculation methods for preparations:
Harmful
Corrosive
Irritant
Very toxic
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

Carcinogenic categories

IARC (International Agency for Research on Cancer)
None of the ingredients is listed.

(Contd. on page 9)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 8)

NTP (National Toxicology Program)
None of the ingredients is listed.

OSHA-Ca (Occupational Safety & Health Administration)
None of the ingredients is listed.

* 12 Ecological information

Toxicity

Aquatic toxicity:	
Alkyl phenol (Proprietary)	
LC50/96h	5 mg/l (Fish - Pimephales promelas)
98-54-4 4-tert-butylphenol	
EC50	2 mg/l (Daphnia magna) (OECD 211 - 21 days)
EC50/48h	4.8 mg/l (Daphnia magna) (OECD 202)
ErC50/72h - Inhibition of average growth rate	14 mg/l (Algae - Pseudokirchneriella subcapitata) (OECD 201)
LC50/96h	> 1 mg/l (Fish - Oncorhynchus mykiss) (OECD 203)
NOEC/21days	0.73 mg/l (Daphnia magna) (OECD 202)
NOEC/72h	0.32 mg/l (Algae - Pseudokirchneriella subcapitata) (OECD 201)
1761-71-3 4,4'-methylenebis(cyclohexylamine)	
EC50/48h	9.24 mg/l (Daphnia magna)
EC50/72h	140 mg/l (Algae)
LC50/96h	46 mg/l (Fish - Leuciscus idus)
111-40-0 2,2'-iminodiethylamine	
LC50/48h	16 mg/l (Daphnia magna)
LC50/96h	430 mg/l (fish)
84852-15-3 4-nonylphenol, branched	
LC50/96h	0.23 mg/l (Fish - Oncorhynchus mykiss)
	0.138 mg/l (Fish - Pimephales promelas)
100-51-6 Benzyl alcohol	
EC50/24h	55 mg/l (Daphnia magna)
IC50/72h	700 mg/l (Algae)
LC50/96h	10 mg/l (Fish - Lepomis macrochirus)
	460 mg/l (Fish - Pimephales promelas)

Persistence and degradability No further relevant information available.
Bioaccumulative potential No further relevant information available.
Mobility in soil No further relevant information available.
Ecotoxical effects:
Remark: Toxic for fish
Additional ecological information:
General notes:
Water hazard class 3 (Self-assessment): extremely hazardous for water
Do not allow product to reach ground water, water course or sewage system, even in small quantities.
Must not reach bodies of water or drainage ditch undiluted or unneutralized.
Danger to drinking water if even extremely small quantities leak into the ground.
Also poisonous for fish and plankton in water bodies.
Toxic for aquatic organisms
Results of PBT and vPvB assessment
PBT: Not available.
vPvB: Not available.
Other adverse effects No further relevant information available.

(Contd. on page 10)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 9)

* 13 Disposal considerations

Waste treatment methods
Recommendation:
Dispose safely in accordance with local and national legislations
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

Uncleaned packagings:
Recommendation:
Packagings that cannot be cleansed are to be disposed of in the same manner as the product.

* 14 Transport information

UN-Number	
DOT, ADR, IMDG, IATA	UN2735
UN proper shipping name	
DOT	Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine, Aliphatic amine (Proprietary))
ADR	2735 Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine, Aliphatic amine (Proprietary)), MARINE POLLUTANT/ ENVIRONMENTALLY HAZARDOUS
IMDG	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIETHYLENETRIAMINE, Aliphatic amine (Proprietary), 4-nonylphenol, branched), MARINE POLLUTANT
IATA	POLYAMINES, LIQUID, CORROSIVE, N.O.S. (DIETHYLENETRIAMINE, Aliphatic amine (Proprietary))
Transport hazard class(es)	
DOT	

Class	8 Corrosive substances
Label	8
ADR, IMDG	

Class	8 Corrosive substances
Label	8
IATA	

Class	8 Corrosive substances
Label	8

(Contd. on page 11)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 10)

Packing group	
DOT, ADR, IMDG, IATA	III
Environmental hazards:	Product contains environmentally hazardous substances: 4-tert-butylphenol, 4-nonylphenol, branched
Marine pollutant:	Yes Symbol (fish and tree)
Special marking (ADR):	Symbol (fish and tree)
Special precautions for user	Warning: Corrosive substances
Danger code (Kemler):	80
EMS Number:	F-A,S-B
Segregation groups	Alkalis
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
DOT	
Remarks:	Special marking with the symbol (fish and tree).
ADR	
Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
IMDG	
Excepted quantities (EQ)	Code: E0 Not permitted as Excepted Quantity
UN "Model Regulation":	UN2735, Polyamines, liquid, corrosive, n.o.s. (Diethylenetriamine, Aliphatic amine (Proprietary)), MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS, 8, III

* 15 Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture
Sara

Section 355 (extremely hazardous substances):
None of the ingredients is listed.

Section 313 (Specific toxic chemical listings):
None of the ingredients is listed.

TSCA (Toxic Substances Control Act):	
	Alkyl phenol (Proprietary)
	Alkyl ether amine (Proprietary)
98-54-4	4-tert-butylphenol
	Cycloaliphatic amines
	Aliphatic amine (Proprietary)
1761-71-3	4,4'-methylenebis(cyclohexylamine)
111-40-0	2,2'-iminodiethylamine
84852-15-3	4-nonylphenol, branched
	Alkyl amine (Proprietary)
67762-90-7	Siloxanes and silicones, di-Me, reaction products with silica
100-51-6	Benzyl alcohol

(Contd. on page 12)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 11)

Proposition 65

Chemicals known to cause cancer:
None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for females:
None of the ingredients is listed.

Chemicals known to cause reproductive toxicity for males:
None of the ingredients is listed.

Chemicals known to cause developmental toxicity:
None of the ingredients is listed.

Carcinogenic categories

EPA (Environmental Protection Agency)
None of the ingredients is listed.

TLV (Threshold Limit Value established by ACGIH)
None of the ingredients is listed.

NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients is listed.

GHS label elements The product is classified and labeled according to the Globally Harmonized System (GHS).

Hazard pictograms

GHS05 GHS06 GHS08 GHS09

Signal word Danger

Hazard-determining components of labeling:
Alkyl phenol (Proprietary)
Alkyl ether amine (Proprietary)
4-nonylphenol, branched
Aliphatic amine (Proprietary)

Hazard statements
Harmful if swallowed.
Toxic if inhaled.
Causes severe skin burns and eye damage.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.
Causes damage to the skin, the respiratory system, the digestive system and the stomach. Route of exposure: Oral, Inhalative, Dermal. May cause damage to the central nervous system and the lung.
May cause damage to organs through prolonged or repeated exposure.
Toxic to aquatic life with long lasting effects.

Precautionary statements
If medical advice is needed, have product container or label at hand.
Keep out of reach of children.
Read label before use.
Do not breathe dust/fume/gas/mist/vapours/spray.
In case of inadequate ventilation wear respiratory protection.
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Store locked up.
Dispose of contents/container in accordance with local/regional/national/international regulations.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

(Contd. on page 13)

Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 07/08/2014 Version 7 Reviewed on 07/08/2014

Trade name: Powercrete R 95 Part B

(Contd. of page 12)

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Department issuing SDS: Product safety department
Contact:
Seal For Life Technologies & Services B.V.
Gasselterstraat 20, 9503JB Stadskanaal, the Netherlands
Tel: +31 599 696 170; Fax. +31 599 696 177; Email: info@sealforlife.com

Date of preparation / last revision 07/08/2014 / 6

Abbreviations and acronyms:
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
ACGIH: American Conference of Governmental Industrial Hygienists
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
VOC: Volatile Organic Compounds (USA, EU)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
Acute Tox. 4: Acute toxicity, Hazard Category 4
Acute Tox. 2: Acute toxicity, Hazard Category 2
Acute Tox. 3: Acute toxicity, Hazard Category 3
Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Repr. 2: Reproductive toxicity, Hazard Category 2
STOT SE 1: Specific target organ toxicity - Single exposure, Hazard Category 1
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
STOT RE 2: Specific target organ toxicity - Repeated exposure, Hazard Category 2
Aquatic Acute 1: Hazardous to the aquatic environment - AcuteHazard, Category 1
: Hazardous to the aquatic environment - AcuteHazard, Category 2
Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2

*** Data compared to the previous version altered.**

Mountain Valley Pipeline, LLC
Mountain Valley Pipeline Project
Docket No. CP16-10-000

Response to Information Request Issued July 10, 2019

ATTACHMENT E

PIPE COATING TEST DATA

2019 Ninth Avenue
PO Box 1925
Altoona, PA 16603
(814) 946-4306
NELAP: PA 07-062, VA 460212

89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

www.fairwaylaboratories.com

EQT Midstream	Project:	BRIDGEPORT COATING SAM	
120 Professional Place Bldg. 2	Project Number:	[none]	**Reported:**
Bridgeport WV, 26330	Collector:	CLIENT	07/23/18 11:51
Project Manager: Alex Daquila	Number of Containers:	3	

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Sample Type	Date Sampled	Date Received
COATING SAMPLES	8G13085-01	Solid	Grab	07/11/18 12:00	07/12/18 19:07

Fairway Laboratories, Inc.

Reviewed and Submitted by:

Michael P. Tyler
Laboratory Director

Fairway Labs in Altoona, PA is a NELAP (National Environmental Laboratory Accreditation Program) accredited lab, and as such, certifies that all applicable test results meet the requirements of NELAP, unless otherwise stated on the analytical report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

2019 Ninth Avenue
PO Box 1925
Altoona, PA 16603
(814) 946-4306
NELAP: PA 07-062, VA 460212

89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

FAIRWAY LABORATORIES
www.fairwaylaboratories.com

EQT Midstream	Project:	BRIDGEPORT COATING SAM	
120 Professional Place Bldg. 2	Project Number:	[none]	**Reported:**
Bridgeport WV, 26330	Collector:	CLIENT	07/23/18 11:51
Project Manager: Alex Daquila	Number of Containers:	3	

Client Sample ID: COATING SAMPLES **Date/Time Sampled:** 07/11/18 12:00

Laboratory Sample ID: 8G13085-01 (Solid/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Analytical Method	* Analyst	Note
Conventional Chemistry Parameters by SM/EPA Methods								
% Solids	98.4		0.100	%	07/18/18 16:30	SM 2540 G-97	pra	
Reactive Cyanide by Preparation Method EPA 7.3.3.2								
Reactive Cyanide	<0.992		0.992	mg/kg dry	07/19/18 07:00	EPA 9014	cjw	
Reactive Sulfide by Preparation Method EPA 7.3.4.2								
Reactive Sulfide	<19.5		19.5	mg/kg dry	07/16/18 15:16	EPA 9034	cjw	
TCLP Extraction by EPA 1311								
# pH @ 22.3°C	4.96			pH Units	07/17/18 08:05	EPA 1311	cjw	
TCLP Metals extracted by EPA 1311								
Silver	<0.0200		0.0200	mg/l	07/20/18 11:17	EPA 6010B/2.0	sr	
Arsenic	<0.0400		0.0400	mg/l	07/20/18 11:17	EPA 6010B/2.0	sr	
Barium	0.111		0.0500	mg/l	07/20/18 11:15	EPA 6010B/2.0	sr	
Cadmium	<0.0200		0.0200	mg/l	07/20/18 11:17	EPA 6010B/2.0	sr	
Chromium	<0.0250		0.0250	mg/l	07/20/18 11:17	EPA 6010B/2.0	sr	
Mercury	<0.00200		0.00200	mg/l	07/19/18 13:46	EPA 7471B	jks	

Fairway Laboratories, Inc.

Fairway Labs in Altoona, PA is a NELAP (National Environmental Laboratory Accreditation Program) accredited lab, and as such, certifies that all applicable test results meet the requirements of NELAP, unless otherwise stated on the analytical report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

2019 Ninth Avenue
PO Box 1925
Altoona, PA 16603
(814) 946-4306
NELAP: PA 07-062, VA 460212

89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

FAIRWAY LABORATORIES
www.fairwaylaboratories.com

EQT Midstream	Project:	BRIDGEPORT COATING SAM	
120 Professional Place Bldg. 2	Project Number:	[none]	**Reported:**
Bridgeport WV, 26330	Collector:	CLIENT	07/23/18 11:51
Project Manager: Alex Daquila	Number of Containers:	3	

Client Sample ID: COATING SAMPLES **Date/Time Sampled:** 07/11/18 12:00

Laboratory Sample ID: 8G13085-01 (Solid/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Analytical Method	* Analyst	Note
TCLP Metals extracted by EPA 1311								
Lead	<0.0400		0.0400	mg/l	07/20/18 11:17	EPA 6010B/2.0	sr	
Selenium	<0.100		0.100	mg/l	07/20/18 11:17	EPA 6010B/2.0	sr	
TCLP Semivolatile Organic Compounds by EPA 1311/Extraction Method 3510C								
Pyridine	<100		100	ug/l	07/17/18 21:40	EPA 8270D	cdb	
1,4-Dichlorobenzene	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
2,4-Dinitrotoluene	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
3 & 4-Methylphenol	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
Hexachlorobenzene	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
Hexachlorobutadiene	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
Hexachloroethane	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
2-Methylphenol	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
Nitrobenzene	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
Pentachlorophenol	<250		250	ug/l	07/17/18 21:40	EPA 8270D	cdb	
2,4,5-Trichlorophenol	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
2,4,6-Trichlorophenol	<50.0		50.0	ug/l	07/17/18 21:40	EPA 8270D	cdb	
Surrogate: 2-Fluorophenol		*43.3 %*	*30.6-66.8*		*07/17/18 21:40*	*EPA 8270D*	cdb	
Surrogate: Phenol-d6		*34.1 %*	*17.9-51.5*		*07/17/18 21:40*	*EPA 8270D*	cdb	
Surrogate: Nitrobenzene-d5		*67.3 %*	*30.6-140*		*07/17/18 21:40*	*EPA 8270D*	cdb	

Fairway Laboratories, Inc.

Fairway Labs in Altoona, PA is a NELAP (National Environmental Laboratory Accreditation Program) accredited lab, and as such, certifies that all applicable test results meet the requirements of NELAP, unless otherwise stated on the analytical report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

2019 Ninth Avenue
PO Box 1925
Altoona, PA 16603
(814) 946-4306
NELAP: PA 07-062, VA 460212

89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

FAIRWAY LABORATORIES
www.fairwaylaboratories.com

EQT Midstream	Project:	BRIDGEPORT COATING SAM	
120 Professional Place Bldg. 2	Project Number:	[none]	**Reported:**
Bridgeport WV, 26330	Collector:	CLIENT	07/23/18 11:51
Project Manager: Alex Daquila	Number of Containers:	3	

Client Sample ID: COATING SAMPLES **Date/Time Sampled:** 07/11/18 12:00

Laboratory Sample ID: 8G13085-01 (Solid/Grab)

Analyte	Result	MDL	RL	Units	Date / Time Analyzed	Analytical Method	* Analyst	Note
TCLP Semivolatile Organic Compounds by EPA 1311/Extraction Method 3510C								
Surrogate: 2-Fluorobiphenyl		*70.3 %*	*40.6-121*		*07/17/18 21:40*	*EPA 8270D*	cdb	
Surrogate: 2,4,6-Tribromophenol		*94.9 %*	*50.4-131*		*07/17/18 21:40*	*EPA 8270D*	cdb	
Surrogate: Terphenyl-d14		*87.8 %*	*10-185*		*07/17/18 21:40*	*EPA 8270D*	cdb	
TCLP Volatile Organic Compounds by EPA Method 1311/8260B								
Benzene	<50.0		50.0	ug/l	07/17/18 23:52	EPA 8260B	bag	
2-Butanone	<500		500	ug/l	07/17/18 23:52	EPA 8260B	bag	
Carbon tetrachloride	<50.0		50.0	ug/l	07/17/18 23:52	EPA 8260B	bag	
Chlorobenzene	<50.0		50.0	ug/l	07/17/18 23:52	EPA 8260B	bag	
Chloroform	<50.0		50.0	ug/l	07/17/18 23:52	EPA 8260B	bag	
1,2-Dichloroethane	<50.0		50.0	ug/l	07/17/18 23:52	EPA 8260B	bag	
1,1-Dichloroethene	<50.0		50.0	ug/l	07/17/18 23:52	EPA 8260B	bag	
Tetrachloroethene	<50.0		50.0	ug/l	07/17/18 23:52	EPA 8260B	bag	
Trichloroethene	<50.0		50.0	ug/l	07/17/18 23:52	EPA 8260B	bag	
Vinyl chloride	<50.0		50.0	ug/l	07/17/18 23:52	EPA 8260B	bag	
Surrogate: 4-Bromofluorobenzene		*98.7 %*	*70-130*		*07/17/18 23:52*	*EPA 8260B*	bag	
Surrogate: 1,2-Dichloroethane-d4		*108 %*	*70-130*		*07/17/18 23:52*	*EPA 8260B*	bag	
Surrogate: Fluorobenzene		*106 %*	*70-130*		*07/17/18 23:52*	*EPA 8260B*	bag	

Fairway Labs in Altoona, PA is a NELAP (National Environmental Laboratory Accreditation Program) accredited lab, and as such, certifies that all applicable test results meet the requirements of NELAP, unless otherwise stated on the analytical report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

2019 Ninth Avenue
PO Box 1925
Altoona, PA 16603
(814) 946-4306
NELAP: PA 07-062, VA 460212

89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

www.fairwaylaboratories.com

EQT Midstream	Project:	BRIDGEPORT COATING SAM	
120 Professional Place Bldg. 2	Project Number:	[none]	**Reported:**
Bridgeport WV, 26330	Collector:	CLIENT	07/23/18 11:51
Project Manager: Alex Daquila	Number of Containers:	3	

Definitions

If surrogate values are not within the indicated range, then the results are considered to be estimated.

Reporting limits are adjusted accordingly when samples are analyzed at a dilution due to the matrix.

MBAS, calculated as LAS, mol wt 348

If the solid sample weight for VOC analysis does not fall within the 3.5-6.5 gram range, the results are considered estimated values.

Unless otherwise noted, all results for solids are reported on a dry weight basis.

Samples collected by Fairway Laboratories' personnel are done so in accordance with Standard Operating Procedures established by Fairway Laboratories.

#	The following analyses are to be performed immediately upon sampling: pH, sulfite, chlorine residual, dissolved oxygen, filtration for ortho phosphorus, and ferrous iron. The date and time reported reflect the time the samples were analyzed at the laboratory; and should be considered as analyzed outside the EPA holding time.
^	The following analytes are to be filtered immediately upon sampling: Hexavalent Chromium. Filtration through a 0.45 micron filter within 15 minutes of sampling is required for compliance with the Clean Water Act (CWA) for reporting of hexavalent chromium to prevent interconversion of chromium species.
*	P indicates analysis performed by Fairway Laboratories, Inc. at the Pennsdale location. This location is PaDEP Chapter 252 certified.
*	G indicates analysis performed by Fairway Laboratories, Inc. at the Greensburg location PaDEP: 65-00392. This location is PaDEP Chapter 252 certified.
<	Represents "less than" - indicates that the result was less than the reporting limit.
MDL	Method Detection Limit - is the lowest or minimum level that provides 99% confidence level that the analyte is detected. Any reported result values that are less than the RL are considered estimated values. If Radiological results are reported, the MDC - Minimum Detectable Concentration is shown in the MDL column.
RL	Reporting Limit - is the lowest or minimum level at which the analyte can be quantified.
[CALC]	Indicates a calculated result. Calculations use results from other analyses performed under accredited methods.

2019 Ninth Avenue
PO Box 1925
Altoona, PA 16603
(814) 946-4306
NELAP: PA 07-062, VA 460212

89 Kristi Road
Pennsdale, PA 17756
(570) 494-6380
PaDEP: PA 41-04684

State Certifications: MD 275, WV 364

www.fairwaylaboratories.com

EQT Midstream	Project:	BRIDGEPORT COATING SAM	
120 Professional Place Bldg. 2	Project Number:	[none]	**Reported:**
Bridgeport WV, 26330	Collector:	CLIENT	07/23/18 11:51
Project Manager: Alex Daquila	Number of Containers:	3	

Terms & Conditions

Services provided by Fairway Laboratories Inc. are limited to the terms and conditions stated herein, unless otherwise agreed to in a formal contract.

CHAIN OF CUSTODY Fairway Laboratories Inc. ("Fairway," "us" or "we") will initiate a chain-of-custody/request for analysis upon sample receipt unless the client includes a completed form with the received sample(s). Upon request, Fairway will provide chain-of-custody forms for use.

CONFIDENTIALITY Fairway maintains confidentiality in all of our client interactions. The client's consent will be required before releasing information about the services provided.

CONTRACTS All contracts are subject to review and approval by Fairway's legal council. Each contract must be signed by a corporate officer.

PAYMENT/BILLING Unless otherwise set forth in a signed contract or purchase order, terms of payment are "NET 30 Days." The time allowed for payment shall begin based on the invoice date. A 1.5% per month service charge may be added to all unpaid balances beyond the initial 30 days. In its sole discretion, Fairway reserves the right to request payment before services and hold sample results for payment of due balances. We will not bill a third party without prior agreement among all parties acknowledging and accepting responsibility for payment.

SAMPLE COLLECTION AND SUBMISSION Clients not requesting collection services from Fairway are responsible for proper collection, preservation, packaging, and delivery of samples to the laboratory in accordance with current law and commercial practice. Fairway shall have no responsibility for sample integrity prior to the receipt of the sample(s) and/or for any inaccuracy in test or analyses results as a result of the failure of the client or any third party to maintain the integrity of samples prior to delivery to Fairway. All samples submitted must be accompanied by a completed chain of custody or similar document clearly noting the requested analyses, dates/time sampled, client contact information, and trail of custody. Samples received at the laboratory after business hours are verified on the next business day. Discrepancies are documented on the Receiving Document.

SUBCONTRACTING Some analyses may require subcontracting to another laboratory. Unless the client indicates otherwise, this decision will be made by Fairway. Subcontracted work will be identified on the final report in accordance with NELAC requirements.

RETURN OF RESULTS Fairway routinely provides faxed or verbal results within 10 working days of receipt of sample(s) and a hard copy of the data results is routinely received via US Postal Service within 15 working days. At the request of the client, Fairway may offer expedited return of sample results. Surcharges may apply to rush requests. All rush requests must be pre-approved by Fairway. We reserve the right to charge an archive retrieval fee for results older than one (1) year from the date of the request. All records will be maintained by Fairway for 5 years, after which, they will be destroyed.

SAMPLE DISPOSAL Fairway will maintain samples for four (4) weeks after the sample receipt date. Fairway will dispose of samples which are not and/or do not contain hazardous wastes (as such term is defined by applicable federal or state law), unless prior arrangements have been made for long-term storage. Fairway reserves the right to charge a disposal fee for the proper disposal of samples found or suspected to contain hazardous waste. A return shipping charge will be invoiced for samples returned to the client at their request.

HAZARD COMMUNICATION The client has the responsibility to inform the laboratory of any hazardous characteristics known or suspected about the sample, and to provide information on hazard prevention and personal protection as necessary or otherwise required by applicable law.

WARRANTY AND LIMITATION OF LIABILITY For services rendered, Fairway warrants that it will apply its best scientific knowledge and judgment and to employ its best level of effort consistent with professional standards within the environmental testing industry in performing the analytical services requested by its clients. We disclaim any other warranties, expressed or implied by law. Fairway does not accept any legal responsibility for the purposes for which client uses the test results.

LITIGATION All costs associated with compliance to any subpoena for documents, for testimony in a court of law, or for any other purpose relating to work performed by Fairway Laboratories, Inc. shall be invoiced by Fairway and paid by client. These costs shall include, but are not limited to, hourly charges for the persons involved, travel, mileage, and accommodations and for any and all other expenses associated with said litigation.

Fairway Laboratories, Inc.

Fairway Labs in Altoona, PA is a NELAP (National Environmental Laboratory Accreditation Program) accredited lab, and as such, certifies that all applicable test results meet the requirements of NELAP, unless otherwise stated on the analytical report.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

#1

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

Please print. See back of COC for instructions/terms and conditions.

FAIRWAY LABORATORIES
Environmental Laboratory
2019 9th Ave.
P.O. Box 1925
Altoona, PA 16602
Phone: (814) 946-4306
Fax: (814) 946-8791

Client Page # 1 of 1

Client Name: EQM Midstream
Address: 2200 Energy Dr
Canonsburg, PA
Contact: Alex Dagnila
Phone #: 412-694-5378
Fax #:
Project Name: Bridgeport Coating Samples
Quote/PO #:

Received on ice? Y N
Sample Temp:

Reportable to PADEP? Yes ☐
PWSID #

TAT: Normal ☐ Rush ☒
Rush TAT subject to pre-approval and surcharge.
Date Required: ASAP 1

LAB USE ONLY
Work Order # 8G13085
Attach #
FLI Page # 1 of 2
Tracking #

Sample Description/Location	GRAB	Composite	Composite Start Date	Composite Start Time	GRAB -or- Composite End Date	GRAB -or- Composite End Time	Matrix: Solid	Matrix: Water	Matrix: Other	# of Containers	Analyses Requested: TCLP Metals	TCLP VOCs	TCLP SVOCs	Reactive Sulfide	Reactive Cyanide			Bottle Type/Comments
Coating Samples	X				7/11/18	12:00PM	X			5	X	X	X	X	X			

	Date	Time
Sampled by: (Signature)		
Relinquished by:	7/11/18	5:00PM
Relinquished by:	7/12/18	19:07
Relinquished by:		

	Date	Time
Received by:	7/12/18	1245
Received by:		
Received by:		
Received by: B Bandes	7-12-18	1907

Remarks

By relinquishing my sample to Fairway Laboratories, Inc., I hereby agree to the terms and conditions printed on the reverse.

White Original - FLI File Canary - FLI Copy Pink - Customer Receipt Copy

Chain of Custody Receiving Document

Receiver: BB Page 2 of 2

Date/Time of this check: 7-13-18 1020 Client: EQM Mudstream Lab # 8G13085

Received on ICE? Y ☐ * **Sample Temperature when delivered to the Lab:** 1.0 **Acceptable?** Y ☐ * **or In cool down process?** ☐ *

(Not applicable for WV compliance)

Custody Seals? N Intact? —

COC/Labels on bottles agree? Y ☐* Correct containers for all the analysis requested? Y ☐ * Matrix: solid

COC #	Number and Type of BOTTLES										Comments
	Poly Non-Pres.	Poly H2SO4	Poly HNO3	Amber H2SO4	Amber Non-Pres.	Poly NaOH	VOCS (Head space?)	Other ☐ *	Properly Preserved ☐ *	Bacti	☐ * Internal notification completed for deviations.
COATING								3-32oz clear jar	NA		

* DEVIATION PRESENT:		CLIENT CALLED:	CLIENT RESPONSE:	
⊗ No Ice	( )	YES ( )	Proceed with analysis; qualify data	( )
⊗ Not at Proper Temperature	( )	By Whom:	Will Resample	( )
⊗ Wrong Container	( )		Provided Information	( )
⊗ Missing Information:	( )	Date:	No Response; Proceed and qualified	( )
			Client Contact: Date:	

* Comments: _____

Commonwealth of Pennsylvania
County of Washington

VERIFICATION

Pursuant to Rule 2005 of the Rules of Practice and Procedure of the Federal Energy Regulatory Commission ("Commission"), 18 C.F.R. § 385.2005, Jeffrey Klinefelter, being duly sworn, upon his oath says that he is Vice President, MVP Construction & Engineering for the Mountain Valley Pipeline Project; that he is an authorized representative of Mountain Valley Pipeline, LLC; that he has read and is familiar with the foregoing responses to the Commission's July 10, 2019 data request in Docket No. CP16-10-000; that the contents of the responses are true and correct to the best of his knowledge, information and belief; and that he has full power and authority to prepare the responses and execute this verification.

Jeffrey Klinefelter
Vice President, MVP Construction & Engineering

Subscribed and sworn before me this 25TH day of July 2019.

Vanessa Rose Serafini
Notary Public

COMMONWEALTH OF PENNSYLVANIA
NOTARIAL SEAL
Vanessa Rose Serafini, Notary Public
City of Pittsburgh, Allegheny County
My Commission Expires Feb. 24, 2020
MEMBER, PENNSYLVANIA ASSOCIATION OF NOTARIES