



SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)

Project: _____ Substitution Request Number: _____

 From: _____
 To: _____ Date: _____

 A/E Project Number: _____
 Re: _____ Contract For: _____

Specification Title: _____ Description: _____
 Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
 Manufacturer: _____ Phone: _____
 Address: _____
 Trade Name: _____ Model No.: _____
 Installer: _____ Phone: _____
 Address: _____

History: New product 1-4 years old 5-10 years old More than 10 years old

Differences between proposed substitution and specified product: _____

Point-by-point comparative data attached — REQUIRED BY A/E

Reason for not providing specified item: _____

Similar Installation:

Project: _____ Architect: _____
 Address: _____ Owner: _____
 _____ Date Installed: _____

Proposed substitution affects other parts of Work: No Yes; explain _____

Savings to Owner for accepting substitution: _____ (\$ _____).

Proposed substitution changes Contract Time: No Yes [Add] [Deduct] _____ days.

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase — Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
 - Same warranty will be furnished for proposed substitution as for specified product.
 - Same maintenance service and source of replacement parts, as applicable, is available.
 - Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
 - Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
 - Proposed substitution does not affect dimensions and functional clearances.
 - Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
 - Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.
-

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments:

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: _____ Date: _____

Additional Comments: Contractor Subcontractor Supplier Manufacturer A/E
 Other:

CSBHT-Series (Bridge and Highway)

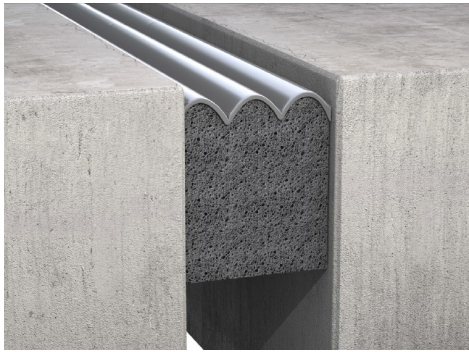
Description

The Bridge and Highway Traffic-Grade Compression Seal (CSBHT) is composed of an open micro-cell polyurethane foam impregnated with a hydrophobic polymer sealing compound. It has been developed to meet the high performance needs of state and federal DOT projects.

The CSBHT seals have constant internal forces built into each cell. These cells continuously push against each other and the sidewalls of an opening to provide a permanent, watertight seal eliminating costly water damage, as well as allowing for a greater degree of joint movement. The seal incorporates a factory applied traffic-grade silicone coating on one side of the foam seal.

The CSBHT system provides a waterproof, dustproof, airtight, UV stable, chemically resistant, soundproof and insulated primary seal. Once the CSBHT is installed in the joint, the material expands depending on temperature, adapting to the width of the joint and the irregularities of the substrate provided such profile changes are not sudden or extreme.

Recommended for use in applications in the horizontal position, where there needs to be resistance to typical roadway traffic or chemicals found on roadways, bridges, garages, plaza decks and other areas that may be a concern.



Physical Properties

Properties	Result
Thermal Conductivity	0.05 W/m. °C
Thermal Resistance	ASTM C 518, 3.3, hr-°F-ft ² /Btu
Temperature Stability Range	-40° F to 185° F
Tensile Strength	ASTM 3574, meets 21 psi min.
Ultimate Elongation	ASTM 3574, 125% +/- 20%
Resistance to Compression Set	ASTM 3574, Max. 2.5%
Shear Strength	Min. 8N/cm ²
Mildew Resistant	Excellent
UV Resistant	Excellent

Features and Benefits

- Can accommodate rapid rates of joint movement
- Supplied in pre-compressed state for ease of installation
- Excellent compression recovery
- Permanently conforms to varying joint contours
- Allows for up to 100% (±50%) movement from mean joint size
- Consistent depth of product
- Not based on asphaltic or bitumastic impregnation
- Resilient and flexible to -40°F (long term)
- Standard Color: Black, Gray, Dark Gray
- Sizes available in 1/4" increments
- **LEED Credits** - Up to two (2) LEED credits depending on the location of the project.

PRODUCT	MIN. WIDTH IN (MM)	MID-RANGE IN (MM)	MAX. WIDTH IN (MM)	TOTAL MOVEMENT IN (MM)
CSBHT-050	0.25" (6.4)	0.50" (12.7)	0.75" (19.1)	0.50" (12.7)
CSBHT-100	0.50" (12.7)	1.00" (25.4)	1.50" (38.1)	1.00" (25.4)
CSBHT-150	0.75" (19.1)	1.50" (38.1)	2.25" (57.2)	1.50" (38.1)
CSBHT-200	1.00" (25.4)	2.00" (50.8)	3.00" (76.2)	2.00" (50.8)
CSBHT-250	1.25" (31.8)	2.50" (63.5)	3.75" (95.3)	2.50" (63.5)
CSBHT-300	1.50" (38.1)	3.00" (76.2)	4.50" (114.3)	3.00" (76.2)
CSBHT-350	1.75" (44.5)	3.50" (88.9)	5.25" (133.4)	3.50" (88.9)
CSBHT-400	2.00" (50.8)	4.00" (101.6)	6.00" (152.4)	4.00" (101.6)
CSBHT-500	2.50" (63.5)	5.00" (127.0)	7.50" (190.5)	5.00" (127.0)
CSBHT-600	3.00" (76.2)	6.00" (152.4)	9.00" (228.6)	6.00" (152.4)



CSBHT-Series

INSTALLATION INSTRUCTIONS

Material Application

For use in **horizontal joints**. Double sided silicone coating available upon request.

Recommended Tools

- Tape Measure
- Sharp Knife
- Miter Saw
- Duct Tape
- Clean Cloth
- Isopropyl Alcohol
- Caulking Tool
- Jiffy Mixer
- Margin Trowel
- Mineral Spirits
- 2 Empty, Clean Containers

Material Sizing

1. Joints must be sized every 5-7 feet (1.524-2.137 meters) to ensure gap opening is uniform and depth is sufficient for the supplied material.



NOTE: Allow sufficient depth for the material to be recessed 1/8"–1/4" in the joint.

Material Preparation

1. Store material at a minimum of 68°F (20°C) for a minimum of 24 hours prior to installation, regardless of temperature at location of installation.

TIP: Material will expand faster when hot and slower when cold. In cold temperatures, store material in a heated area 24 hours prior to installation. In hot temperatures, store material out of direct sunlight and not in an enclosed storage container where temperatures may exceed 100°F.

2. Store materials in a dry, enclosed area. Make sure materials are off the ground and out of direct sunlight.
3. Use a miter saw to make any cuts to the seal before removing the clear shrink packing. All starting and ending pieces must be square to the termination point.

WARNING: Install the material directly after removing the shrink packaging to ensure the material does not expand past the joint opening.

4. Use a sharp knife to make any cuts after the clear shrink packaging and wooden boards have been removed.



TIP: Apply mineral spirits to the knife for a smoother cut.

Joint Preparation

1. Verify that the joint is clean, sound, and will provide an appropriate surface for installation of the joint sealant.
 - a. Use compressed air to clean any loose debris from the joint.
 - b. Apply water or alcohol to a clean cloth and wipe the joint walls to the depth of the sealant materials plus 1".
 2. Verify that the joint is uniform and repair any spalls prior to installation.
 3. Apply duct tape to both edges of the substrate face to prevent the epoxy from contacting the deck surface.
 4. Check the material for appropriate length, width, and depth.
 - a. Supplied material should be pre-compressed to a size smaller than the intended joint opening.
 - b. Joint depth must allow for the material to be recessed 1/4" from the substrate surface.
-

Epoxy Preparation

1. Mix Part A and Part B separately.
2. Transfer the entire contents of Part A (resin) and then Part B (hardener) into a clean, empty container. Mix the material thoroughly with a low speed (approx. 300 rpm) drill or jiffy mixer.

WARNING: Part B must always be added Part A, and mixed in a 1:1 ratio.

3. Mix until the black and white is evenly blended leaving no streaks of either color.
4. Transfer the mixture to another clean container to avoid any leftover residue from streaking the final mixture.

TIP: Mix only the required amount of epoxy that will be used within a 30 minute timeframe to prevent the epoxy from curing prematurely.

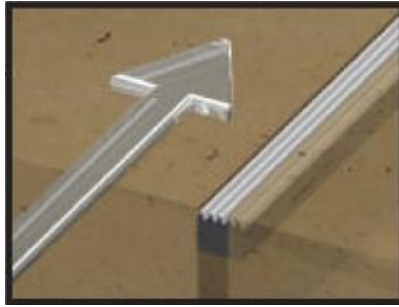
EPOXY TIPS:

1. The epoxy will not cure when the temperature is below 40°F.
2. For every +17°F the epoxy cures twice as fast.
3. For every -17°F the epoxy cures twice as slow.
4. Greater volume = less time to cure.
5. Smaller volume = more time to cure.
6. A technique to increase the pot life of the epoxy is to split up the mixed material into smaller units.



Sealant Installation

1. Begin installation at one end of the joint and work to the opposite end using butt seams.

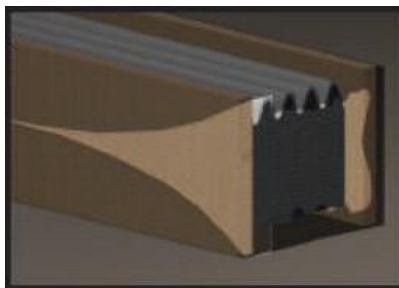


2. When fully prepared to install, apply a 1/16" – 1/8" coating of the epoxy mixture to both joint walls using a 1" margin trowel to a depth of the sealant material plus 1/2".
 - a. The epoxy must still be wet upon installation of the seal. The working time for the epoxy is approximately 30 minutes depending on the temperature.
 - b. If the epoxy hardens on the surface of the substrate before installation, another coat of epoxy can be applied within 8 hours. After 8 hours, the substrate surface must be abraded to eliminate the amine blush that occurs during final cure.



WARNING: Pay attention to the direction of insertion marked on the packaging.

3. Cut the shrink packaging along the edge of the masonite strapping.



WARNING: Be prepared to install the material immediately once the packaging is removed to prevent the material from expanding past the joint width.

4. Verify that the material is cut square at both ends for proper seams. All pieces must be square to the termination point.

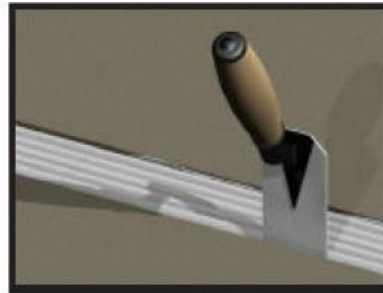
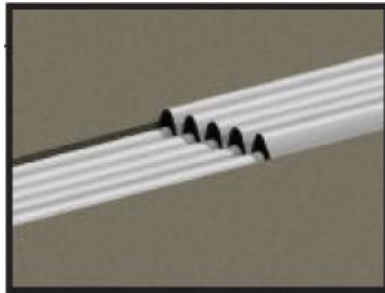
Sealant Installation

- Remove the white release liner on both sides of the seal.



WARNING: Make sure not to pull, twist, or stretch the material in the process of installation to avoid tearing the white release liner.

- Initially, position seal 1/8" above the deck surface. Once the material is partially expanded in the joint, it can then be installed to 1/4" below the surface of the joint using a putty knife or margin trowel.
 - Wedges can be used to aid installation. Remove the wedges once the material begins to expand and before the epoxy cures.



Seams

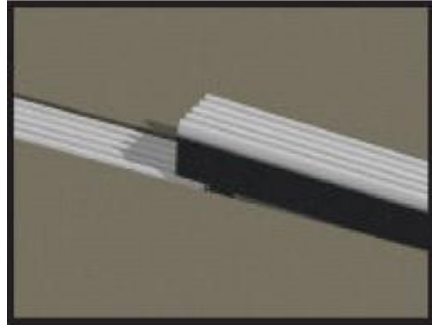
- Verify that the new piece of material is cut square and not at an angle to the previous installed piece.
- Apply flexible sealant to the butt end of the new piece of material.

WARNING: Do not apply flexible seal to the faces of the seal that are in contact with epoxy.

TIP: If crew size permits and two lengths of material can be prepared, the ends to be seamed can be held above the deck surface and the mitered pieces can be pushed down into the joint together.

Seams

3. Overlap extra material (approx. 1/2" -1") at seams and splices to ensure that the seam is in compression after installation.



4. Butt seam all 'T' and '+' intersections.

NOTE: After installation, if there are any mitered joints with a hole or void, use the supplied flexible seal to fill and seal the joint.

Finish

1. Tool the Dow 888 over all seams and transitions using a small caulking tool.
2. Evenly spread the Dow 888 on exposed seams to allow for a clean, aesthetic finish.
3. **Use supplied Dow 888 caulking to apply side beads along both sides of the joint.**
4. Remove any excess flexible seal or epoxy left on the surface of the material or substrate.

WARNING: Do not allow the flexible seal or epoxy to cure before removal.

5. Remove the blue painters tape from the substrate surface.

PART 1 – GENERAL

1.01 Summary

- A. The work shall consist of furnishing and installing expansion joints in accordance with the details shown on the plans and the requirements of the specifications. The joints are proprietary designs utilizing polyurethane foam impregnated with a waterproof polymer.
- B. Related Work
 - Precast concrete
 - Cast-in-place concrete
 - Sealants and caulking

1.02 Submittals

- A. Template Drawings - Submit typical expansion joint cross-section(s) indicating pertinent dimensioning of opening, profile recess and adjacent construction.

1.03 Product Delivery, Storage and Handling

- A. Deliver products in each manufacturer's original, intact, labeled containers and store under cover in a dry location until installed. Store off the ground, protect from weather and construction activities.

1.04 Acceptable Manufacturer

- A. All joints shall be as designed and manufactured by EMS, Inc., 13311 Main Road, Akron, New York 14001.
- B. Alternate manufacturers and their products will be considered, provided they meet the design concept and are produced of materials that are equal to or superior to those called for in the base product specification.
- C. Any proposed alternate systems must be submitted and receive approval 21 days prior to the bid. All post bid submittals will not be considered. This submission shall be in accordance with MATERIALS AND SUBSTITUTIONS.

Any manufacturer wishing to submit for prior approval must provide the following:

1. A working 6" sample of the proposed system with a letter describing how system is considered superior to the specified system.

2. A project proposal drawing that illustrates the recommended alternate system installed in the horizontal construction that is specific to the project. Typical catalog cut sections will not be considered.
3. Any substitution products not adhering to all specification requirements within will not be considered.

1.05 Quality Assurance

- A. Manufacturer: Shall have a minimum of ten (10) years of experience specializing in the design and manufacture of expansion joint systems.

PART 2 - PRODUCT

2.01 General

- A. Provide flexible profile manufactured from open-cell polyurethane foam impregnated with a hydrophobic polymer sealing compound. The system also includes a factory applied traffic grade silicone coating on the seal designed to provide protection against moisture and water intrusion on horizontal surfaces. Profile shall be capable of providing a minimum of plus or minus 50% building movement and accommodate moderate variations in width of opening, complex directional change transitions, and resist ultraviolet degradation. The profile shall be installed with our two-part epoxy adhesive.

Provide Foam Seal, Model CSBHT as manufactured by EMS, Inc. and as indicated on drawings for horizontal expansion joint locations.

2.02 Materials

- A. Seal - Profile shall be pre-formed and manufactured from polyurethane impregnated with a waterproof polymer sealing compound. The profile shall meet the requirements of the properties listed in the table below.

<u>Physical Properties</u>	<u>Test Method</u>	<u>Results</u>
Density		10 lb/ft ³
Thermal Conductivity		0.05 W/m.°C
Temperature Stability Range		-40°F to 212°F
Tensile Strength	ASTM 3574	Meets 21 psi min.
Ultimate Elongation	ASTM 3574	125% ±20%
Resistance to Compression Set	ASTM 3574	Max 2.5%
Shear Strength		Min. 8N/cm ²
Mildew Resistance		Excellent
Thermal Resistance	ASTM C518	3.3 hr- ⁰ F-ft ² /Btu
UV Resistance		Excellent

2.03 Fabrication

- A. Seal profile shall be shipped in nominal five-foot standard lengths in manufacturer's standard shipping carton. Seals shall be cut to length on jobsite where required for straight lengths or directional change transitions utilizing appropriate tools, saws and miter boxes. All cuts shall be accurately measured and completed in a neat and workmanlike manner to ensure quality work.

2.04 Finishes

- A. Seals - Standard color offering: Gray, Black

PART 3 - EXECUTION

3.01 Installation

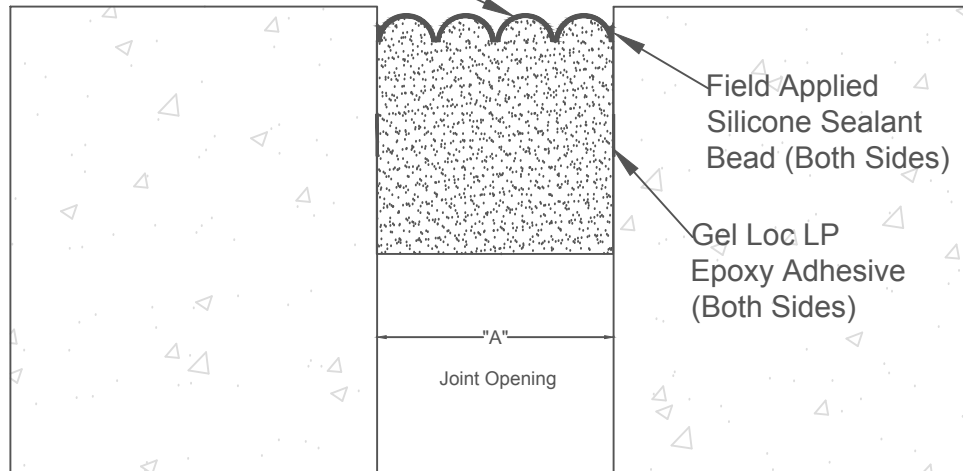
- A. Where indicated and noted on the contract drawings, install seal profiles in a neat workmanlike manner. All surfaces to receive seals shall be free from dirt, water, frost, and any loose foreign debris that may be detrimental to effective joint sealing.
- B. Installation contractor shall verify that seal profile is to be installed in the proper width opening for the appropriate temperature at time of installation. Variations in width or incorrect opening that may affect proper installation and product performance shall be brought to the attention of the architect and product manufacturer prior to installation.
- C. Install seal profiles in strict accordance with the manufacturer's typical details and installation procedure in conjunction with the advice of their qualified representative.

3.02 Clean and Protect

- A. Protect seal profile during construction. After work has been completed in adjacent areas, clean exposed surfaces with a mild cleaner that will not harm or attack the silicone coating.

END OF SECTION

Factory Applied U.V. Resistant Traffic Grade Silicone



CSBHT-SERIES
Horizontal Condition

* Sizes available in 0.25" increments and up to 6".
Contact EMS for additional information.

PRODUCT	"A" Min. Width IN (MM)	"A" Mid Range IN (MM)	"A" Max. Width IN (MM)	Total Movement IN (MM)	Seal Depth IN (MM)
CSBHT-050	0.25" (6.4)	0.50" (12.7)	0.75" (19.1)	0.50" (12.7)	1.50" (38.1)
CSBHT-100	0.50" (12.7)	1.00" (25.4)	1.50" (38.1)	1.00" (25.4)	2.00" (50.8)
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CSBHT-300	1.50" (38.1)	3.00" (76.2)	4.50" (114.3)	3.00" (76.2)	3.00" (76.2)

NO.	Description	Date	By
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13311 Main Road * Akron * New York * 14001
Phone: (716) 542-3991 * Fax: (716) 542-3996 * E-mail: sales@eriemetal.com

PROJECT: N/A

TITLE: CSBHT-Series Horizontal Condition

Detailed by:	Date:
BAF	07/20/16
Checked by:	Date:
SLP	07/22/16
Scale:	EMS Job #:
NTS	N/A
Sheet No.:	Drawing No.:
1 of 1	CSBHT-1

MATERIAL SAFETY DATA SHEET**SECTION I – MATERIAL IDENTIFICATION**

MATERIAL NAME: Foam Seal Two-Part Epoxy (Part A)

MANUFACTURER: Erie Metal Specialties, Inc.
13311 Main Road
Akron, NY 14001SUPPLIER: Erie Metal Specialties, Inc.
13311 Main Road
Akron, NY 14001EMERGENCY PHONE:
CHEM-TREC: (800) 424-9300

(716) 542-3991

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

<u>Name</u>	<u>CAS Number</u>
Aromatic Hydrocarbon Blend	Trade Secret
Modified Epoxy Resin	Trade Secret
Nonyl Phenol	84852-15-3

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

SECTION III – HAZARDS IDENTIFICATION

OSHA/HCS STATUS This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

POTENTIAL ACUTE HEALT EFFECTS

Inhalation	May cause respiratory tract irritation.
Ingestion	May be harmful if swallowed.
Skin	May cause skin irritation. May cause sensitization by skin contact.

See toxicological information (Section 11)**SECTION IV – FIRST AID MEASURES**

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Check for and remove any contact lenses. Get medical attention.
Skin contact	Wash skin thoroughly with soap and water or use recognized skin cleanser. 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. Get medical attention. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse.
Inhalation	Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. Maintain an open airway. In the event of any complaints or symptoms, avoid further exposure.
Ingestion	Get medical attention immediately. Wash out mouth with water. Move exposed person to fresh air. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. Never give anything by mouth to an unconscious person.
Notes to physician	No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

SECTION V - FIRE FIGHTING MEASURES

<u>Flammability of the product</u>	In a fire or if heated, a pressure increase will occur and the container may burst.
<u>Extinguishing media</u>	
Suitable	Use an extinguishing agent suitable for the surrounding fire.
Not suitable	None known.
Special exposure hazards	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Hazardous combustion products	Decomposition products may include the following materials: carbon dioxide carbon monoxide halogenated compounds
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION VI – ACCIDENTAL RELEASE MEASURES

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 material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
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).
Large spill	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). 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.
Small spill	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble or absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

SECTION VII – HANDLING AND STORAGE

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 and smoking. Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease 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 ingest. Avoid breathing vapor or mist. 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.
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.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

Consult local authorities for acceptable exposure limits.

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.
Hygiene measures	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and 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. Ensure that eyewash stations and safety showers are close to the workstation location.
<u>Personal protection</u>	
Respiratory	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.
Eyes	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 or dusts.
Skin	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.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Liquid
Flash point	Closed cup: >104.4°C (>219.9°F)
Color	Straw
Odor	Aromatic
Density	~1.14 g/cm ³
VOC	35 g/l (A+B Combined)

SECTION X – STABILITY AND REACTIVITY

Stability	The product is stable.
Conditions to avoid	Avoid exposure- obtain special instructions before use. Do not swallow.
Materials to avoid	No specific data
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	Hazardous polymerization may occur under certain conditions of storage or use. Exotherm when curing in mass

SECTION XI – TOXICOLOGICAL INFORMATION

Potential chronic health effects

Chronic effects	Contains material that may cause target organ damage, based on animal data. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
Carcinogenicity	Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.

Acute toxicity

Conclusion/Summary	Not available.
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SECTION XII – ECOLOGICAL INFORMATION

Environmental effects	No known significant effects or critical hazards
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SECTION XIII – DISPOSAL CONSIDERATIONS
Waste disposal

The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. 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 local authority requirements. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

SECTION XIV – TRANSPORT INFORMATION

REGULATORY INFORMATION	UN NUMBER	PROPER SHIPPING NAME	CLASSES	PACKING GROUP	ADDITIONAL INFORMATION
DOT Classification	Not regulated.		-	-	-
TDG Classification	Not regulated.		-	-	-
ADR/RID Class	Not regulated.		-	-	-
IMDG Class	Not regulated.		-	-	-
IATA-DGR Class	Not regulated.		-	-	-

SECTION XV – REGULATORY INFORMATION
U.S. Federal regulations

United States inventory (TSCA 8b): All components are listed or exempted.
 SARA 302/304/311/312 extremely hazardous substances: No products were found.
 SARA 302/304 emergency planning and notification: No products were found.
 SARA 302/304/311/312 hazardous chemicals: nonylphenol
 SARA 311/312 MSDS distribution - chemical inventory - hazard identification: nonylphenol:
 Immediate (acute) health hazard
 Clean Water Act (CWA) 307: phenol; solvent naphtha (petroleum), heavy arom.; naphthalene
 Clean Water Act (CWA) 311: phenol; solvent naphtha (petroleum), heavy arom.; naphthalene
 Clean Air Act (CAA) 112 accidental release prevention: epichlorhydrin
 Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
 Clean Air Act (CAA) 112 regulated toxic substances: epichlorhydrin

SARA 313
Form R – Reporting Requirements
Product Name
CAS number
Concentration

SARA 313 notifications must not be detached from the MSDS and any copying and redistribution of the MSDS shall include copying and redistribution of the notice attached to copies of the MSDS subsequently redistributed.

State regulations

Massachusetts Substances

 The following components are listed:
 NONYLPHENOL

New Jersey Hazardous Substances

 The following components are listed:
 ALKYL PHENOL, n.o.s.

New York Acutely Hazardous Substances

The following components are listed: Naphthalene

Pennsylvania RTK Hazardous Substances

 The following components are listed:
 PHENOL, NONYL-; NAPHTHALENE

United States inventory (TSCA 8b) All components are listed or exempted.

SECTION XVI – OTHER INFORMATION

Hazardous Material Information System (U.S.A.)

Health	2
Flammability	1
Physical Hazards	0
Personal Protective Equipment	C

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 MSDSs 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.

The information contained in this Material Safety Data Sheet applies only to the actual Erie Metal Specialties, Inc. ("EMS") product identified and described herein. This information is not intended to address, nor does it address the use or application of the identified EMS product in combination with any other material, product or process. All of the information set forth herein is based on technical data regarding the identified product that EMS believes to be reliable as of the date hereof. Prior to each use of any EMS product, the user must always read and follow the warnings and instructions on the product's current Technical Data Sheet, product label and Material Safety Data Sheet for each EMS product, which are available at web site and/or telephone number listed in Section 1 of this MSDS.

ISSUE DATE:.....12/01/12

PREPARED BY: Erie Metal Specialties, Inc.
13311 Main Road
Akron, NY 14001

MATERIAL SAFETY DATA SHEET**SECTION I – MATERIAL IDENTIFICATION**

MATERIAL NAME: Foam Seal Two-Part Epoxy (Part B)

MANUFACTURER: Erie Metal Specialties, Inc.
13311 Main Road
Akron, NY 14001SUPPLIER: Erie Metal Specialties, Inc.
13311 Main Road
Akron, NY 14001EMERGENCY PHONE:
CHEM-TREC: (800) 424-9300

(716) 542-3991

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

<u>Name</u>	<u>CAS Number</u>
Aromatic Hydrocarbon Blend	Mixture
Benzyl Alcohol	100-51-6
Nonylphenol	84852-15-3
Proprietary blend of aliphatic and cycloaliphatic amines	Trade Secret
Silica, quartz	14808-60-7

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

SECTION III – HAZARDS IDENTIFICATION

OSHA/HCS STATUS This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

POTENTIAL ACUTE HEALT EFFECTS

Inhalation	Irritating to respiratory system.
Ingestion	Harmful if swallowed. Corrosive to the digestive tract. Causes burns
Skin	Corrosive to the skin. May cause sensitization by skin contact.
Eyes	Corrosive to eyes. Causes irreversible damage to eyes.

See toxicological information (Section 11)**SECTION IV – FIRST AID MEASURES**

Eye contact	Get medical attention immediately. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician. Immediately flush eyes with plenty of water for at least 15 minutes.
Skin contact	Get medical attention immediately. Wash skin thoroughly with soap and water or use recognized skin cleanser. 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. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse.
Inhalation	Get medical attention immediately. Move exposed person to fresh air. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. 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. Maintain an open airway. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
Ingestion	Get medical attention immediately. Wash out mouth with water. Move exposed person to fresh air. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person.

Notes to physician In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

SECTION V - FIRE FIGHTING MEASURES

<u>Flammability of the product</u>	In a fire or if heated, a pressure increase will occur and the container may burst.
<u>Extinguishing media</u>	
Suitable	Use an extinguishing agent suitable for the surrounding fire.
Not suitable	None known.
Special exposure hazards	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
Hazardous combustion products	Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides metal oxide/oxides
Special protective equipment for fire-fighters	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

SECTION VI – ACCIDENTAL RELEASE MEASURES

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 material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment (see Section 8).
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).
Large spill	Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). 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.
Small spill	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

SECTION VII – HANDLING AND STORAGE

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 and smoking. Remove contaminated clothing and protective equipment before entering eating areas. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. 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.
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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.

SECTION VIII – EXPOSURE CONTROLS/PERSONAL PROTECTION

<u>Product name</u> Quartz (SiO ₂)	<u>Exposure limits</u> OSHA PEL Z3 (United States, 9/2005). Notes: 10/(SiO₂+2) TWA: 10 mg/m ³ 8 hour(s). Form: Respirable OSHA PEL Z3 (United States, 9/2005). Notes: 250/(%SiO₂+5) TWA: 250 mppcf 8 hour(s). Form: Respirable OSHA PEL 1989 (United States, 3/1989). Notes: as quartz TWA: 0.1 mg/m ³ , (as quartz) 8 hour(s). Form: Respirable dust ACGIH TLV (United States, 1/2011). TWA: 0.025 mg/m ³ 8 hour(s). Form: Respirable fraction NIOSH REL (United States, 6/2009). TWA: 0.05 mg/m ³ 10 hour(s). Form: respirable dust OSHA PEL Z3 (United States, 9/2005). Notes: 30/(%SiO₂+2) TWA: 30 mg/m ³ 8 hour(s). Form: Total dust.
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.
Hygiene measures	Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
<u>Personal protection</u> Respiratory	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.
Hands	Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
Eyes	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 or dusts.
Skin	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.

SECTION IX – PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Liquid
Flash point	Closed cup: >104.4°C (>219.9°F)
Color	Gray
Odor	Amine-like
Density	~1.7 g/cm ³ [20°C (68°F)]
VOC	35 g/l (A+B Combined)

SECTION X – STABILITY AND REACTIVITY

Stability	The product is stable.
Conditions to avoid	No specific data
Materials to avoid	No specific data
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Hazardous polymerization	Under normal conditions of storage and use, hazardous polymerization will not occur.

SECTION XI – TOXICOLOGICAL INFORMATION
Potential chronic health effects

Chronic effects	Contains material that may cause target organ damage, based on animal data. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels. Prolonged or repeated contact can defat the skin and lead to irritation, cracking and/or dermatitis.
Carcinogenicity	Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.
Developmental effects	Contains material which can cause developmental abnormalities
Fertility effects	Contains material which may impair female fertility, based on animal data.

Acute toxicity

Conclusion/Summary Not available.

Carcinogenicity
Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
Quartz (SiO ₂)	-	-	-	-	Proven.	-

SECTION XII – ECOLOGICAL INFORMATION

Environmental effects No known significant effects or critical hazards

SECTION XIII – DISPOSAL CONSIDERATIONS

Waste disposal The generation of waste should be avoided or minimized wherever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. 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 local authority requirements. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

SECTION XIV – TRANSPORT INFORMATION

REGULATORY INFORMATION	UN NUMBER	PROPER SHIPPING NAME	CLASSES	PACKING GROUP	ADDITIONAL INFORMATION
DOT Classification	UN 3267	Corrosive liquid, basic, organic, n.o.s. (aliphatic and cycloaliphatic amines)	8	III	-
TDG Classification	UN 3267	Corrosive liquid, basic, organic, n.o.s. (aliphatic and cycloaliphatic amines)	8	III	-
ADR/RID Class	UN 3267	Corrosive liquid, basic, organic, n.o.s. (aliphatic and cycloaliphatic amines)	8	III	-
IMDG Class	UN 3267	Corrosive liquid, basic, organic, n.o.s. (aliphatic and cycloaliphatic amines)	8	III	Emergency schedules (EmS) F-A, S-B
IATA-DGR Class	UN 3267	Corrosive liquid, basic, organic, n.o.s. (aliphatic and cycloaliphatic amines)	8	III	-

SECTION XV – REGULATORY INFORMATION

U.S. Federal regulations

United States inventory (TSCA 8b): All components are listed or exempted.
SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: 3-aminomethyl-3,5,5-trimethylcyclohexylamine; 4-tert-butylphenol; benzyl alcohol; calcium carbonate; Quartz (SiO₂)
SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Immediate (acute) health hazard Delayed (chronic) health hazard
Clean Water Act (CWA) 307: 2-methylnaphthalene; 1-methylnaphthalene; naphthalene
Clean Water Act (CWA) 311: naphthalene
Clean Air Act (CAA) 112 accidental release prevention: No products were found.

State regulations

Massachusetts Substances The following components are listed:
BENZYL ALCOHOL

New Jersey Hazardous Substances The following components are listed:
SILICA, QUARTZ; QUARTZ (SiO₂); TITANIUM DIOXIDE; TITANIUM OXIDE (TiO₂); 2-METHYL NAPHTHALENE; NAPHTHALENE, 2-METHYL-; NAPHTHALENE; MOTH FLAKES;
ISOPHORONEDIAMINE;
CYCLOHEXANEMETHANAMINE, 5-AMINO-1,3,3-TRIMETHYL-

New York Acutely Hazardous Substances The following components are listed: Naphthalene
Pennsylvania RTK Hazardous Substances The following components are listed:
QUARTZ (SiO₂); TITANIUM OXIDE (TiO₂); BENZENEMETHANOL; PARTICULATE POLYCYCLIC AROMATIC HYDROCARBONS; NAPHTHALENE

California Prop. 65

WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

United States inventory (TSCA 8b) All components are listed or exempted.

SECTION XVI – OTHER INFORMATION

Hazardous Material Information System (U.S.A.)

Health	3
Flammability	1
Physical Hazards	0
Personal Protective Equipment	D

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ISSUE DATE:.....12/01/12

PREPARED BY: Erie Metal Specialties, Inc.
13311 Main Road
Akron, NY 14001



MATERIAL SAFETY DATA SHEET

Print date: 06/13/2016

Version: 0

Revision date:

1. COMPANY AND PRODUCT IDENTIFICATION

Product name: FLEXIBLE SEAL ANY COLOR

Product code: AC-FSC60

Supplier: Erie Metal Specialties
13311 Main Road
Akron, NY 14001
Phone: 716-542-3991
Fax: 716-542-3996
sales@eriemetal.com
www.eriemetal.com

Emergency telephone number:
* 24 HOUR TRANSPORTATION:
**CHEMTREC: 1-800-424-9300
703-527-3887 (Call collect outside of US)

2. COMPOSITION/INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS

Components	CAS No.	Weight %	OSHA Ceiling Limits	OSHA TWA (final):	ACGIH Ceiling Limits	ACGIH Exposure Limits:	Vendor Exposure Limits:
Toluene	108-88-3	40 - 50%	300 ppm	200 ppm		20 ppm	

3. HAZARDS IDENTIFICATION

Emergency Overview

Irritating to eyes
May cause skin irritation and/or dermatitis.
Harmful by inhalation and if swallowed.

Signal word: WARNING

Principle routes of exposure: Eyes, skin and inhalation.

Eye contact: Avoid contact with eyes. Irritating to eyes.

Skin contact: Prolonged skin contact may defat the skin and produce dermatitis.

Inhalation: Avoid breathing vapors or mists. May cause irritation of respiratory tract. May cause central nervous system depression characterized by the following progressive steps: headache, dizziness, nausea, staggering gait, confusion and unconsciousness.

Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. May cause nervous system depression (e.g. headache, drowsiness, dizziness, loss of coordination, and fatigue) Risk of product entering the lungs on vomiting after ingestion.

Physico-chemical properties: No hazards resulting from material as supplied.

4. FIRST AID MEASURES

General advice: Call a physician immediately.
Show this safety data sheet to the doctor in attendance.

Eye contact: Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Consult a physician

Skin contact: Wash off immediately with soap and plenty of water. Remove and wash contaminated clothing before re-use. Consult a physician if necessary.

Ingestion: If swallowed, seek medical advice immediately and show this container or label. Never give anything by mouth to an unconscious person. Do not induce vomiting without medical advice.

Inhalation: Move to fresh air in case of accidental inhalation of vapors. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Consult a physician.

Note to physician: Treat symptomatically.

Medical condition aggravated by exposure: Dermatitis.

5. FIRE-FIGHTING MEASURES

Flash Point (°C): NA (Classified as a solid) **Flash point (°F):** NA (Classified as a solid) **Flash Point Method:** Not applicable

Flammable limits in air - lower (%): Not determined **Flammable limits in air - upper (%):** Not determined

Suitable extinguishing media: Use dry chemical, CO₂, water spray or 'alcohol' foam.

Unusual hazards: None known

Special protective equipment for fire-fighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Specific methods: Water mist may be used to cool closed containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Ensure adequate ventilation. Use personal protective equipment. Avoid contact with the skin and the eyes Do not breathe vapour/dust.

Environmental precautions: Do not flush into surface water or sanitary sewer system.

Methods for cleaning up: Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).

7. HANDLING AND STORAGE

Handling

Technical measures/precautions: Provide sufficient air exchange and/or exhaust in work rooms.

Safe handling advice: In case of insufficient ventilation, wear suitable respiratory equipment. Do not breathe vapors or spray mist. Wear personal protective equipment. Avoid contact with skin and eyes. Keep container tightly closed. Wash thoroughly after handling.

Storage

Technical measures/storage conditions: Keep containers tightly closed in a dry, cool and well-ventilated place.. Keep product and empty container away from heat and sources of ignition.

Incompatible products: strong oxidizing agents

Safe storage temperature: 40-100 ° F

Shelf life: 2 years

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Components	ACGIH Ceiling Limits	ACGIH Exposure Limits:	OSHA Ceiling Limits	OSHA TWA (final):	NIOSH - Pocket Guide - TWAs:	Vendor Exposure Limits:
Toluene		20 ppm	300 ppm	200 ppm	100 ppm 375 mg/m ³ 150 ppm STEL 560 mg/m ³ STEL	None

Engineering measures: Ensure adequate ventilation.

Personal Protective Equipment

General: Eye Wash and Safety Shower

Respiratory protection: If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, a NIOSH/MSHA certified respirator with organic vapor/P100 filter should be worn.

Hand protection: Neoprene gloves

Skin and body protection: Long sleeved clothing

Eye protection: Goggles.

Hygiene measures: Avoid contact with skin, eyes and clothing.



9. PHYSICAL AND CHEMICAL PROPERTIES:

Physical state:	Paste
Color:	various
Odour:	Solvent, Characteristic
Boiling point/range (°C):	110.6
Boiling point/range (°F):	231
Vapour density:	Heavier than air
Vapour pressure:	Not determined
VOC Content Product (g/L)	388 g/L
VOC Content Product (lb/gal)	3.24
VOC less water and exempt (lb/gal)	3.24
VOC less water and exempt (g/L)	388
HAP Content Product (g/L):	388 g/L
Solubility:	Insoluble
Evaporation rate:	Slower than ether
pH:	NA
Flash Point (°C):	NA (Classified as a solid)
Flash point (°F):	NA (Classified as a solid)
Decomposition temperature:	Not determined
Auto-ignition temperature (°C):	Not determined
Density @ 15.5 ° C (g/cc) :	1.0
Bulk density @ 60 ° F (lb/gal):	8.35
Solids (% by weight):	58 - 62%
Volatiles (% by volume) :	42 - 46%
Partition coefficient (n-octanol/water, log Pow):	Not determined
Explosive properties:	
- upper limit:	No data available
- lower limit:	No data available

10. STABILITY AND REACTIVITY

Stability:

Stable under recommended storage conditions.

Conditions to avoid:

Heat, flames and sparks.

Materials to avoid:

Strong oxidizing agents

Hazardous decomposition products:

Carbon oxides, Smoke

Polymerisation

Not applicable

11. TOXICOLOGICAL INFORMATION

11. TOXICOLOGICAL INFORMATION

Over exposure to toluene has been associated with permanent brain damage characterized by disturbances in gait, personality changes and loss of memory. Toluene has been found to cause cardiac sensitivity, effects on hearing, central nervous system damage, respiratory tract damage and mild reversible liver effects in laboratory animals. Toluene may be harmful to the human fetus based on positive test results with laboratory animals.

No toxicological information is available on the product. Data obtained on components are summarized below.

Components	NTP:	IARC:	OSHA - Select Carcinogens	NIOSH - Selected LD50s and LC50s
Toluene	This product does not contain any material shown to be a carcinogen by the National Toxicology Program (NTP).	This product does not contain any material shown to be a carcinogen by the International Agency for Research on Cancer (IARC).	This product does not contain any material shown to be a carcinogen by OSHA.	12.5mg/LInhalation LC50Rat 12124mg/kgDermal LD50Rat 636mg/kgOral LD50Rat 8390mg/kgDermal LD50Rabbit 26700ppmInhalation LC50Rat

12. ECOLOGICAL INFORMATION

Persistence and degradability: No information available

Mobility: No data available

Bioaccumulation: No data available

Ecotoxicity effects: No data available

Aquatic toxicity: Not Determined

Component Information

Toluene

Ecotoxicity - Fish Species Data:

LC50 (Pimephales promelas - 96h) = 15.22-19.05 mg/L
 LC50 (Pimephales promelas - 96h) = 12.6 mg/L
 LC50 (Oncorhynchus mykiss - 96h) = 5.89-7.81 mg/L
 LC50 (Oncorhynchus mykiss - 96h) = 14.1-17.16 mg/L
 LC50 (Oncorhynchus mykiss - 96h) = 5.8 mg/L
 LC50 (Lepomis macrochirus - 96h) = 11.0-15.0 mg/L
 LC50 (Oryzias latipes - 96h) = 54 mg/L
 LC50 (Poecilia reticulata - 96h) = 28.2 mg/L
 LC50 (Poecilia reticulata - 96h) = 50.87-70.34 mg/L
 LC50 (Pimephales promelas - 96h) = 15.22-19.05 mg/L

Ecotoxicity - Freshwater Algae Data:

EC50 (Selenastrum capricornutum - 96h) = >433 mg/L

13. DISPOSAL CONSIDERATIONS

Waste from residues/unused products: Waste disposal must be in accordance with appropriate Federal, State, and local regulations. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

Contaminated packaging: Do not re-use empty containers

Methods for cleaning up: Take up mechanically and collect in suitable container for disposal.

Components

Toluene

108-88-3

US EPA Waste Number

D001

14. TRANSPORT INFORMATION

U. S. DEPARTMENT OF TRANSPORTATION:

Proper shipping name:

Not Regulated

TDG (CANADA):

Proper shipping name:

Not Regulated

IMDG/IMO:

Proper shipping name:

Not Regulated

IATA/ICAO:

Proper shipping name:

Not Regulated

15. REGULATORY INFORMATION

CANADIAN REGULATIONS:

Canada - WHMIS Classification Information:

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

Canadian Product Classification: Class D2B

Product Classification Graphic(s):



Component Classification Data:

Toluene - 108-88-3

WHMIS hazard class:

B2, D2A, D2B

Canada - National Pollution Release Inventory:

Part 1, Group 1 Substance

Part 5 Substance

Part 1, Group 1 Substance

U.S. FEDERAL REGULATIONS:

OSHA Hazard Communication Standard:

This product is considered to be hazardous under the OSHA Hazard Communication Standard.

Toluene - 108-88-3

CERCLA/SARA - Hazardous Substances and their Reportable Quantities: 1000 lb

SARA (311, 312) hazard class: This product possesses the following SARA Hazard Categories:
Immediate Health (Acute): Yes
Delayed Health (Chronic): Yes
Flammability: Yes
Pressure: No
Reactivity: No

Toluene - 108-88-3

CERCLA/SARA 313 Emission reporting: Listed
CAA - 1990 Hazardous Air Pollutants: Listed
Clean Water Act - Hazardous Substances: Listed
Clean Water Act - Priority Pollutants: Listed

RCRA Status: Listed in Section 13

U.S. STATE REGULATIONS
(RTK):

Listed component present: toluene

Toluene - 108-88-3

California Prop 65: Present
MARTK: Present
Michigan critical materials register list: 100 lb Annual usage threshold
NJRTK: 1866
PARTK: Environmental hazard
Present

INVENTORY STATUS:

United States TSCA - Sect. 8(b) Inventory: This product complies with TSCA

Canada DSL Inventory List - This product complies with DSL

EC EINECS/ELINCS/NLP list: Compliance has not been determined

Inventory - Japan - Existing and New Chemical Substances (ENCS): Compliance has not been determined.

16. OTHER INFORMATION

Sources of key data used to compile the data sheet: Material safety data sheets of the ingredients.

Prepared by: Quaker Chemical Corporation -Safety, Health and Environmental Affairs Group - US

Reason for revision: This data sheet contains changes from the previous version in section(s) 15 and 16

HMIS classification:**Health:**
2**Flammability:**
1**Reactivity:**
0**Personal Protection:**
H**HMIS Use Dilution****Health**
--**Flammability**
--**Reactivity**
--**Personal Protection**
--**NFPA rating:****Health:**
2**Flammability:**
1**Reactivity:**
0**Special:**
NA

* Indicates possible chronic health effect

Personal protection recommendations should be reviewed by purchasers. Workplace conditions are important factors in specifying adequate protection.

Disclaimer

This product's safety information is provided to assist our customers in assessing compliance with safety/health/environmental regulations. The information contained herein is based on data available to us and is believed to be accurate. However, no warranty of merchantability, fitness for any use, or any other warranty is expressed or implied regarding the accuracy of this data, the results to be obtained from the use thereof, or the hazards connected with the use of the product. Since the use of this product is within the exclusive control of the user, it is the user's obligation to determine the conditions for safe use of the product. Such conditions should comply with all regulations concerning the product. Quaker Chemical Corporation ("Quaker") assumes no liability for any injury or damage, direct or consequential, resulting from the use of this product unless such injury or damage is attributable to the gross negligence of Quaker.

End of Safety Data Sheet