Knowledge for Creating and Sustaining the Built Environment

SUBSTITUTION REQUEST

(After the Bidding/Negotiating Phase)

Project: _____ Substitution Request Number: (For Architect to fill in)

_____ From: _____

To: _____ Date: _____

_____ A/E Project Number: _____

Re: _____ Contract For: _____

Specification Title: _____ Description: _____

Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: CSP-Series Plaza Foam Seal System

Manufacturer: Erie Metal Specialties, Inc. Phone: 716-542-3991

Address: 13311 Main Road, Akron, NY 14001

Trade Name: CSP Model No.: CSP

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 ☐ _____

Form Version: June 2004
CSI Form 13.1A

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:

Form Version: June 2004
CSI Form 13.1A

CSP-Series (Foam Plaza Seal)

Plaza Deck Systems

Description

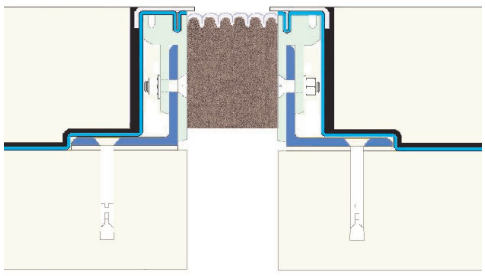
The CSP-Series system is an adjustable high profile joint system primarily used for Plaza Deck applications. This design is adjustable to height variances using unique rail design. Adjustments in elevations may be compensated for in the field to match existing conditions allowing for a good fit. Simply anchor the bottom extrusion into place making sure it is plumb and equal distance from the opposing side, place the top extrusion over the aluminum support extrusion, make adjusts to the elevation using the leveling device, match drill though the vertical legs of the extrusions, and bolt the connection using the stainless steel hardware provided.

This system is designed to be used in split slab and plaza deck applications. The continuous foam seal coupled with the optional extended waterproof wings of the sealing element provide a monolithic seal. The top driving surface has stainless steel formed angles to protect optional extended waterproof wings and sandwich it directly into the aluminum extruded edge rails.

The unique design of the aluminum edge rail system assures proper alignment and rigidity of the system. The overlap of the top rails at the splice locations bridge the bottom aluminum extrusions which provides the system with stability and uniformity in width of joint opening.

The entire system may be factory fabricated to match various demands of field conditions including vertical and horizontal changes in plan.

LEED Credits - Up to two (2) LEED credits depending on the location of the project.



Physical Properties

The system consists of four items: a pre-compressed foam sealing element, a formed top plate, aluminum edge rails, and drill-in anchors spaced at 12” o/c. (Note that the system may be used in conjunction with Polycrete elastomeric concrete.)

The foam sealing element is a fabricated foam seal made from a high density, open micro-cell polyurethane foam, impregnated with a hydrophobic polymer sealing agent. The properties as shown in Table 1.

The formed top plate is fabricated from stainless steel meeting ASTM A167 Type 304. The edge rails are extruded from aluminum with properties meeting ASTM B221 alloy 6063-T5. The drill-in anchors, and screws, are selected and supplied to meet the specific application.

The Polycrete consists of a combination of a resin mixture and a gradation of sands and aggregate sizes (see the Polycrete data sheet for further information and technical properties.)

Table 1 – Physical properties of the CSP

Properties	*Result*
Thermal Conductivity	0.05 W/m. °C
Temperature Range	-40° F to 185° F
Tensile Strength	ASTM 3574, meets 21 psi min.
Ultimate Elongation	ASTM 3574, 125% +/- 20%
Compression Set	ASTM 3574, Max. 2.5%
Shear Strength	Min. 8N/cm^2
Mildew Resistant	Excellent
Staining	None
Flammability	UL94VO Self Extinguishing
Flash Point	590^{o}F (310^{o}C)
Durometer Hardness	ASTM D2240, Shore A 15pts.

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

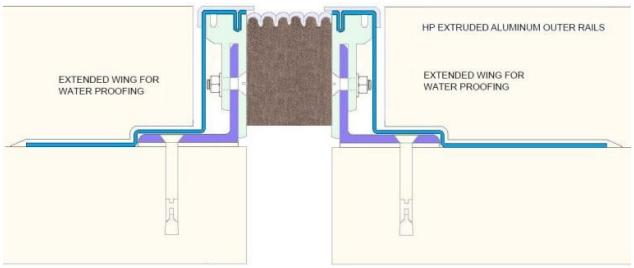
Plaza Deck Systems

CSP-Series

INSTALLATION INSTRUCTIONS

Pre-Installation Procedure

1. Be sure each crew member has read and understands these written procedures. Copies for each crew member is recommended on site.
2. Layout and staging of the aluminum angles will be essential to ensure proper installation.



Surface Conditions

1. Joint surfaces to receive system should be sound, smooth, straight, parallel and level from side to side.

2. The substrate must be level prior to the installation of the aluminum angles. It is of vital importance that the angles be set flat and level to the deck surface elevation. Shims can be used to achieve this.

Inspection

1. Inspection: It is important for the installing party to make sure all parts and required accessories are accounted for. Report discrepancies to EMS immediately.

Anchorage

1. For anchoring the aluminum angle to the substrate, 3/8-16 x 2 Hex Head Cap Screw (SS) and a 3/8" (SS) sleeve anchor will be provided. Spaced 6" from either end and 12" on center.
2. For anchoring the aluminum rail head to the already anchored aluminum angle, 1/4" x 1-1/4" Flat Head SS Bolt with ¼" Lock Nut will be provided. Spaced 6" from either end and 12" on center.
3. For anchoring the SS covers, 5/16" – 24 x 3/4 FH Cap Soc Head Screw will be provided. Spaced 6" from either end and 12" on center. FOR TRAFFIC GRADE APPLICATIONS, SPACING IS 3" FROM EITHER END AND 6" ON CENTER.

Size Up

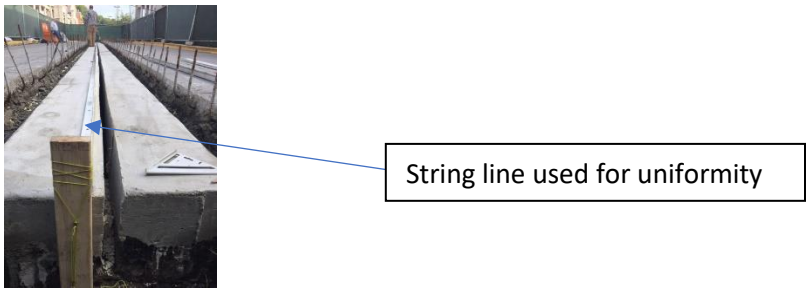
1. Perform all cutting and fitting required for installation of expansion joint covers. Install joint cover assemblies in true alignment and proper relationship to expansion joints and adjoining finished surfaces measured from established lines and levels.

2. Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling. Securely attach in place with all required accessories. Locate anchors at recommended intervals.

3. Maintain continuity of expansion joint cover assemblies with end joints held to a minimum.

Installation

1. Prepare a string line parallel with the joint opening set at the required joint width. Use this as a guide during the install to make sure the width is consistent all the way through.



2. Cut one of the aluminum angles into two 5’ foot sections. Use one of the 5’ sections as your starting piece (for either side) as you will need to stagger the aluminum angles and the aluminum rail heads (the seams should never line up). Make sure each piece has at least 2 holes for proper anchorage.

   Preset the distance between the aluminum angles and rail head extrusions prior to anchoring the rails into place. 1/8” spacers should be used when setting the aluminum angles to the substrate.

3. Lay out the aluminum angles into place (spacing angles 1/8” apart) and start to mark holes for drilling into the substrate. Once the angles are laid out and joint width is confirmed throughout, drill holes and anchor the angles to the substrate.

4.    

NOTE: If angles need to be adjusted for height; lay out angles, place rail heads on top, and shim beneath angles where needed to achieve desired height before anchoring to the substrate. Relief cuts can be made to ensure angles sit flat.

5. Once aluminum angles are set, make sure they are level to one another. Next start to place the aluminum rail heads on top of the installed angles (making sure they are staggered). Be sure the rail heads sit all the way down on the angles (burrs can prevent this from happening).

6. Once the rail heads are put in desired placement, match drill the sides of the angles using the already drilled side holes in the rail heads. This allows there to be slight flexibility when it comes to placing the rail heads where needed. Once this is complete verify that rail heads and angles sit flush and level and begin to anchor the rail head to the angles.

7. Once the angles and rail heads are fastened, begin to install the foam seal material. Follow standard foam seal horizontal installation guidelines for this section. (attached at end of this document)

8. Once the foam seal material is installed, ensure the waterproofing material is locked in place in the reglet in the rail head and screw the SS top covers into the top of the rail heads. This will protect the components below and hold the waterproofing material in place.

Additional Information…

Aluminum Rail Heads

1. The aluminum rail heads are made to meet ASTM B 221, 6063-T5 alloy. The rail heads are extruded to assure uniformity.

2. The top surface of each edge rail incorporates two locations for fastening of the waterproof membrane (if required). One location is the side reglet, which acts as a receiver for a sealing insert and side flashing sheets if required. The other location is the second channel extruded into the rails, which will accept the insertion of a sheet of PVC or other water-shedding material. After the waterproofing material is put into place, the S.S. cover angles and S.S. screws securely hold the sheeting in place. The deck waterproofing should be laid to eliminate any abrupt angles.

CSP-Series Sealing Element

1. The pre-compressed foam seal ranges in size from 1” - 6”. The profile shall be pre-formed and manufactured from polyurethane impregnated foam with a waterproof polymer sealing com- pound that meets ASTM C 518 and ASTM 3574. The foam seal shall be set in epoxy supplied with the seal. The sections of seal are 5’ long with sections of the aluminum rail at 10’ long.

Side Flashing Sheet

1. The side flashing sheets are optional. If required, the sheets are provided in rolls of 12” wide, 60mil thick thermal-rubber sheeting. This material will allow heat-welding at all joints for continuous waterproofing at all transitions, corners, upturns, etc. The flashing sheet may be inserted into the top channel or into the side extruded reglet located on the vertical leg of the aluminum edge rail.

2. If required, flashing sheets should be “sandwiched” between two layers of the deck waterproofing system. The flashing materials must be made of similar material to ensure adhesion with deck waterproofing materials. Flashing sheets should have a short-term temperature resistance (350°F - 400°F) suitable for integration with the hot applied deck waterproofing membrane systems.

Stainless Steel Cover Angles

1. The formed stainless-steel cover angles are Type 304 with mill finish. They are secured to the extrusion with stainless steel machine screws, 12” on center or 6” on center for traffic grade applications, which are seated into the countersunk seats in the stainless-steel angles. At locations where cover plates are required over top of the CSP-Series, a specially fabricated stainless-steel cover plate can be made to extend across the sealing gland and rest on the top of the opposite side substrate. Sizing of the plate is dependent on loading and width of the joint opening. The cover plate will be made from stainless steel plating.

Factory Fabrication of Transitions and Temperature Adjustments

1. Directional changes are best performed in the field to adjust for site conditions. The aluminum parts and S.S. covers can be cut to size using a cut off wheel or circular saw with metal cutting blade. The foam seal material can be cut to size using a sharp knife and mineral spirits for lubrication. Supplied components and written splicing methods should be followed for seal splicing. If factory fabricated transitions are required, contact EMS for additional requirements and staging.

Site Cleanup

1. Dispose of all waste materials from the site. Seal should be cleaned of all foreign matter, as recommended by the seal manufacturer.

Attachments – Foam Seal Installation

CST & CST(DS)-Series
INSTALLATION INSTRUCTIONS

Material Application

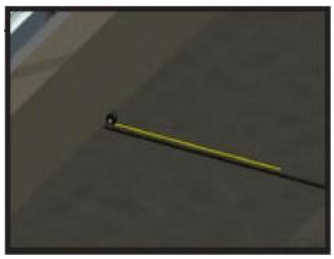
For use in **horizontal joints**. Double sided silicone coating available upon request.

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”–¼” 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.

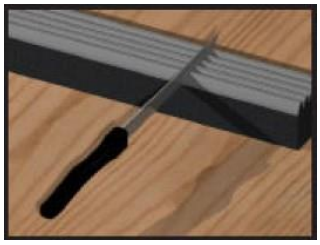
   TIP: Material will expand faster when hot and slower when cold. In cold temperatures, store material in a heated area 24 hours prior to installation. In hot temperatures, store material out of direct sunlight and not in an enclosed storage container where temperatures may exceed 100°F.

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 that the intended joint opening.
    b. Joint depth must allow for the material to be recessed ¼" 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.

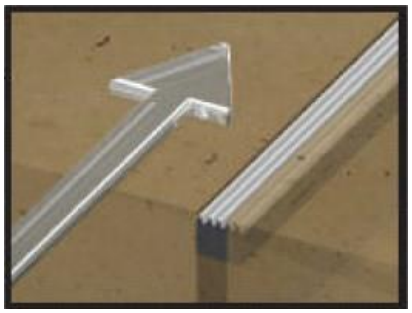
    TIP: Mix only the required amount of epoxy that will be used within a 30 minute timeframe to prevent the epoxy from curing prematurely.

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

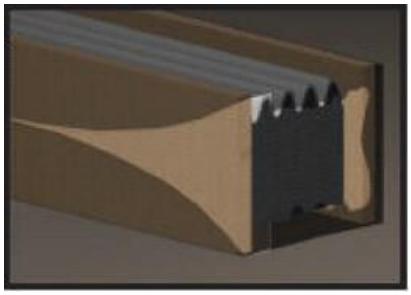
1. Begin installation at one end of the joint and work to the opposite end using butt seams.



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 ½".
    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.

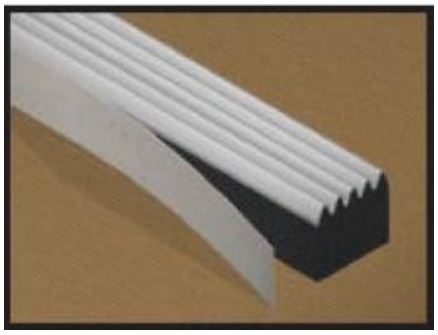


WARNING: Be prepared to install the material immediately once the packaging is removed to prevent the material from expanding past the joint width.

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

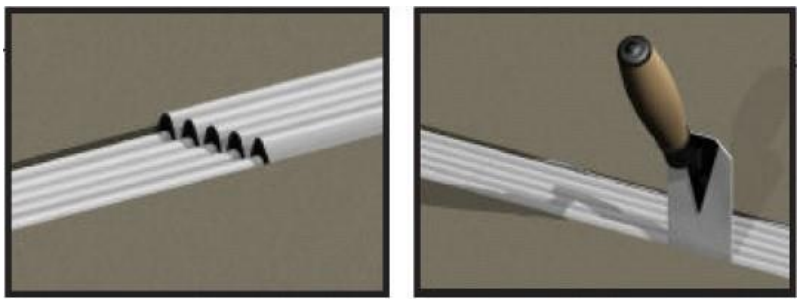
Sealant Installation

5. 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.

6. Initially, position seal 1/8" above the deck surface. Once the material is partially expanded in the joint, it can then be installed to ¼" below the surface of the joint using a putty knife or margin trowel.
   a. Wedges can be used to aid installation. Remove the wedges once the material begins to expand and before the epoxy cures.



Seams

1. Verify that the new piece of material is cut square and not at an angle to the previous installed piece.

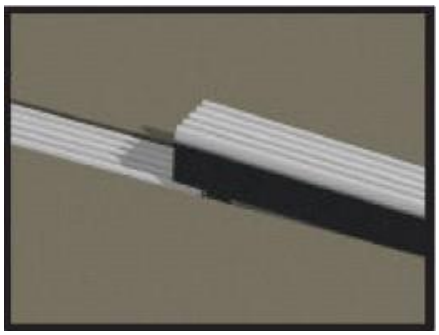
2. Apply flexible sealant to the butt end of the new piece of material.

   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.

SPECIFICATION Division 07900

CSP Series Foam Seal with Polycrete 1600/2020 [Header/Bedding material]

PART 1 - GENERAL

1.01 Summary

A. Section Includes: Furnishing of all materials, labor, and equipment necessary to the surface preparation and the installation of the sealed expansion joints in accordance with the details shown on the plans and these specifications. This design is for parking deck and interior joint applications. Aluminum strip seal extrusions are used in conjunction with self-centering support bars and either aluminum or stainless steel center support cover plates. The system is then encapsulated in Polycrete 1600 and 2020 elastomeric concrete. An optional moisture seal is fitted into additional retainer receiver locations under the metal plate. The design is arranged to flex in response to joint movement and to seal against the intrusion of moisture.

B. Related Sections:
   1. Section 03300 - Cast-in-place concrete
   2. Section 05800 - Joint Sealant
   3. Section 09885 - Protective Coatings for Concrete Parking Decks

1.02 Quality Assurance

A. Application Qualifications: The manufacturer of the expansion joint will provide a technically qualified representative who will train the installer on the proper techniques for installing the expansion joint. Each installation will be registered and approved by the manufacturer.

B. For the purpose of designating type and quality for work of this section, drawings and specifications are based on products manufactured or furnished by the manufacturer listed in Part 2 of this section. No other products will be considered for use.

C. Execute work of this section by skilled, trained applicators conforming to installation methods and procedures in accordance with the manufacturer's printed instructions. The applicator must be licensed by the manufacturer or approved by him. In the latter case, the manufacturer's technical representative must be present for the installation of three (3) joint lengths - equaling no less than 150 LF of joint.

D. Do not proceed with the work until surfaces to receive the expansion joints have been inspected by the engineer and approved by the manufacturer. Correct any deficiencies in the surfaces to receive the expansion joints, as recommended by the manufacturer and engineer.

E. Do not proceed with the work when temperatures are below 45°F, expected to fall below 45°F or above 90°F, unless approved in writing by the manufacturer.

F. Manufacturer will have a minimum of five (5) years experience specializing with elastomeric concrete.

1.03 Submittals

A. Submit in accordance with Section this Specification, unless otherwise indicated.

B. Product Data: Manufacturer's specifications and technical data including the following:
   1. Manufacturer's installation instructions, specially written for this project
   2. Certified test reports indicating compliance with performance requirements specified herein

C. Shop Drawings: Indicate dimensioning, membrane size, model number, general construction, specific modifications, component connections, anchorage methods, and installation procedures, plus the following specific requirements:
   1. Temperature/Adjustment Table, indicating joint width at various temperatures
   2. Dimensions based on anticipated movement for the joint location, as supplied by the engineer

D. Quality Control Submittals:
   1. Statement of Qualifications
   2. Design Data
   3. Test Reports
   4. Manufacturer's Field Reports

E. Contract Close-out Submittals: In accordance with this Specification, submit:
   1. Operating and Maintenance Manuals
   2. Special Warranties

1.04 Delivery, Storage, and Handling

A. Packing and Shipping: Deliver products in original, unopened packaging with labels and seals unbroken.

B. Storage and Protection: Store materials in accordance with manufacturer's recommendations in area protected from weather, moisture, open flame, and sparks. Adhesive must be stored at temperatures between 40° F and 90° F.

1.05 Warranty

A. Warranty will state that the material and installation of the joint system complies with requirements of the contract documents and the manufacturer's printed instructions for installing the expansion joints.

B. Warranty will state the responsibility of the installer/manufacturer to stand behind the installed system for the warranty period indicated and for the conditions listed below:
   1. Leakage of the parking deck system, including points in transition
   2. Abrasion and wear of the materials resulting from normal traffic loading
   3. Cracking of the elastomeric concrete material and de-bonding between it and the concrete

PART 2 - PRODUCTS

2.01 Manufacturers

A. The Foam Plaza Seal will be the following:

1. CSP-Series profile as supplied by EMS, Inc., 13311 Main Road, Akron, NY 14001 Phone: (716) 542-3991 Fax: (716) 542-3996

B. Elastomeric Concrete header material will be the following:

1. Polycrete 1600 Elastomeric Concrete by EMS, Inc., 13311 Main Road, Akron, NY 14001 Phone: (716) 542-3991 Fax: (716) 542-3996

C. Elastomeric Concrete bedding material will be the following:

1. Polycrete 2020 Elastomeric Concrete by EMS, Inc., 13311 Main Road, Akron, NY 14001 Phone: (716) 542-3991 Fax: (716) 542-3996

2.02 Components and Materials

A. Seal - Profile shall be pre-formed and manufactured from a polyurethane impregnated with a waterproof polymer sealing compound that meets ASTM 518, ASTM 283 and DIN 18542. The profile shall meet the requirements of the properties listed in the table below.

Physical Properties	Test Method	Results
Density, lb/ft3		10
Thermal Conductivity		0.05 W/m.°C
Temperature Stability Range		-40°F to 212°F
Tensile Strength	ASTM 3574	21 psi Min.
Ultimate Elongation	ASTM 3574	ASTM 3574 125% ±20%
Resistance to Compression Set		Max 2.5% Shear
Strength		Min. 8N/cm2
Mildew Resistance		Excellent
Staining		None
Flammability Self-Extinguishing	UL 94VO Meets CAL 117	Self Extinguishing
Flash Point		590°F (310°C) Durometer Hardness ASTM D2240 S 590°F (310°C)
Durometer Hardness	ASTM D2240	Shore A 15 pts.

B. Elastomeric Concrete: Polycrete 1600 is a fast setting, elastomeric, 100% solid, two-component, and urethane/epoxy system. The resins are mixed with a pre-measured sand and stone combination to form the mortar mix.

PART 3 - EXECUTION

3.01 Inspection

A. Prior to installation of the expansion joint profile, the installer will visit the site and notify the proper authority in writing of any conditions (done under other sections) that might be detrimental to the installation or performance of the expansion joint. Coordinate the installation with related work.

3.02 Preparation of Surfaces of Block Out Recess in Deck

A. Construct the block-out recess and joint opening to the dimensions shown in the manufacturer's literature. The width of the joint opening should comply with the dimension shown in the temperature/adjustment table on the contract plans. The anticipated movement should be within the movement limits of the seal size selected for use.

B. All surfaces to receive the elastomeric concrete will be dry, clean, and sound concrete, free of loose, delaminated, and spalled sections. Repair any sections that do not meet these criteria. The surfaces to receive the system will be sandblasted to exposed aggregate. Sandblasting increases surface area to increase bond capacity of the elastomeric concrete, and removes all laitance and other bond-inhibiting contaminants. Tape off the edges of the concrete recess.

3.03 Installation

A. DD-Edge Rails -

1. The edge rails are made from ASTM 6061-T6-aluminum material, which enables the heat welding of various configurations at directional changes and transitions, as mentioned above. These changes in plane, irregularities around columns, wall-to-floor, or up-and-over conditions, such as stairs or curbs are a common occurrence. Thermo-plastic material lends itself very well to solving these difficult to seal conditions.

2. Factory-made directional changes and transitions may be made at EMS's fabrication plant, according to drawings and dimensions provided by the field contractor. However, with minimal training, field crewmen will adapt quickly to successful splices.

B. Side Flashing Sheet

1. The side flashing sheets are optional. If required for specific projects the sheets are provided in rolls of 12" wide 1/16" thick PVC sheeting. PVC material will allow heat welding at all joints for continuous waterproofing at all transitions, corners, upturns, etc. The flashing sheet may be inserted into the top channel or into the side extruded reglet located on the vertical leg of the aluminum edge rail.

2. If required, flashing sheets will be "sandwiched" between two layers of the deck waterproofing system. The flashing materials must be PVC-based material to ensure adhesion with deck waterproofing materials. Flashing sheets have a short-term temperature resistance (350°F - 400°F.) suitable for integration with the hot applied, deck waterproofing membrane systems.

C. Stainless Steel Cover Angles

1. The formed stainless steel cover angles comply with ASTM A167, Type 304 with mill finish. They are secured to extrusion with stainless steel machine screws, 6" on center, which are seated into the countersunk seats in the stainless steel angles. These formed angle covers are removable to allow for expansion joint gland replacement. At locations where cover plates are required over top of the DD-series gland, a specially fabricated stainless steel cover plate to can be made to extend across the sealing gland and rest on the top of the opposite side cover angle. Sizing of the plate is dependant on loading and width of the joint opening.

D. Factory Fabrication Of Transitions and Temperature Adjustment

1. In addition to factory heat welded splices, EMS's fabrication plant we will also fabricate the aluminum edge rails to match the field conditions.

2. At the time of installation, the engineer of record will be consulted for the temperature adjustment table. This will determine the joint opening "setting" at that given deck temperature. Preset the distance between the aluminum rail extrusions prior to anchoring the rails into place with the use of spacers. Keep in mind that the opening may be wider or narrower by the next day. Adjustments must be made to keep in sync with the deck temperature.

E. Surface Condition

1. Joint surfaces to receive system will be sound, smooth, straight, parallel, and level from side to side.

F. Installation

1. Inspection: Manufacturer's technician will be on site at commencement of installation for inspection of substrate preparation and demonstration of installation procedures**.** Bids must include a specific line item for manufacturer's technical service and will be considered incomplete and subject to disqualification if excluded. Technical service is defined as the paid, contracted service of a manufacturer's representative or factory technician.

2. The following is a general summary of installation requirements. In all cases the manufacturer's standard written instructions or specific instructions of the manufacturer's technician are to be followed.

G. Anchorage

1. Use epoxy anchoring devices and fasteners for securing expansion joint cover assemblies or concrete expansion anchors. It is the contractor's option to purchase fasteners from manufacturer. Fasteners will be 3/8" diameter x 4" long anchor, carbon-steel grade II, zinc-chromate yellow finish, UNC 16, threaded end- to-end, with nuts of the same material.

H. Size-up

1. Perform all cutting and fitting required for installation of expansion joint covers. Install joint cover assemblies in true alignment and proper relationship to expansion joints and adjoining finished surfaces measured from established lines and levels. Take into consideration movement table from engineer.

2. Allow adequate free movement for thermal expansion and contraction of metal to avoid buckling. Securely attach in place with all required accessories. Locate anchors at recommended intervals, not less than three inches from each end.

3. Maintain continuity of expansion joint cover assemblies with end joints held to a minimum and metal members aligned with metal guide pins

I. Seal Placement

1. Integrate flashing sheets with deck waterproofing system materials according to waterproofing manufacturer's instructions. Install seals in continuous lengths to eliminate leakage opportunities. All transitions and terminations will be factory-welded wherever possible according to field measurements and drawings on centerline provided by the contractor. Site welding, when needed, will be carried out after suitable instruction by the expansion joint manufacturer and/or their representative.

J. Site Cleanup

1. Dispose of all waste materials from the site. Seal will be cleaned of all foreign matter as recommended by the seal manufacturer

3.05 Field Quality Control

A. Work that does not conform to the specified requirements will be corrected and/or replaced as directed by the manufacturer and engineer.

B. Manufacturer/installer will supply guaranty/warranty to the owner authority, as required.

END OF SECTION

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 14001

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

EMERGENCY PHONE: (716) 542-3991
CHEM-TREC: (800) 424-9300

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS Number
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

Flammability of the product	In a fire or if heated, a pressure increase will occur and the container may burst.
Extinguishing media	
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.

Personal protection

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^{o}C (>219.9^{o}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.

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. 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 14001

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

EMERGENCY PHONE: (716) 542-3991
CHEM-TREC: (800) 424-9300

SECTION II – COMPOSITION/INFORMATION ON INGREDIENTS

Name	CAS Number
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

Flammability of the product — In a fire or if heated, a pressure increase will occur and the container may burst.

Extinguishing media
- 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.

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

Product name	Exposure limits
Quartz (SiO_2)	**OSHA PEL Z3 (United States, 9/2005). Notes: 10/(SiO2+2)** TWA: 10 mg/m³ 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/m³, (as quartz) 8 hour(s). Form: Respirable dust **ACGIH TLV (United States, 1/2011).** TWA: 0.025 mg/m³ 8 hour(s). Form: Respirable fraction **NIOSH REL (United States, 6/2009).** TWA: 0.05 mg/m³ 10 hour(s). Form: respirable dust **OSHA PEL Z3 (United States, 9/2005). Notes: 30/(%SiO2+2)** TWA: 30 mg/m³ 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.
Personal protection	
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

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.

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