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: _____

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 ☐ _____

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.

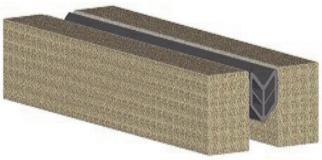
Signed by: _____ Date: _____

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

Form Version: June 2004
CSI Form 13.1A

J-Series

Two Part Epoxy Systems



Description

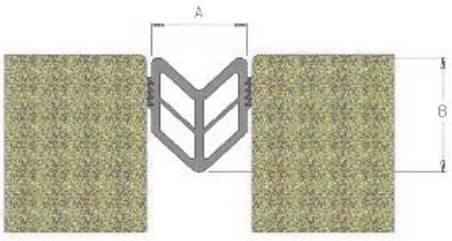
The J-Series system includes an extruded elastomeric profile and a high-strength, two-part epoxy based structural adhesive. When inserted into a contraction or expansion joint in a substrate, the system will seal the opening from the intrusion of water and debris. The unique design allows the seal to work under compression or tension.

High-strength adhesive is used with the J-Series profiles to compete specifically with those seals that claim movement in the tension cycle. The standard J-Series seal can be used for airport and bridge applications, where normal horizontal and vertical movements are a design parameter. The J-Series is specifically designed for applications requiring +/-50% movement to accommodate thermal change and 25% longitudinal movement in skewed conditions.

The larger size seals (greater than 2 inches) are installed using a vacuum pump to depressurize and collapse the lower internal chambers, thereby facilitating ease of insertion. After insertion, the vacuum is released and the air pressure returns to normal. The stiffener webs of the seal provide constant compression on the adhesive as it cures.

The internal web structure is an improvement over similar seals that rely on the inflation to make the bond adhere. Reliance on air pressure to make a bond indicates the seal profile is not a true compression seal. Some contractors have difficulty controlling the 20-psi requirement. Excessive air pressure can squeeze the adhesive out of the gap and move the profile out of place.

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



Physical Properties

The J-Series system consists of two items: an elastomeric seal profile and a high-strength adhesive.

The seal profile is available in several specific designs. The seal material is a high-quality, polychloroprene (neoprene) rubber, meeting ASTM D3542 with physical requirements as shown in Table 1.

The adhesive is a high-strength, two-part, modified epoxy-based material. It is 100% reactive and will develop a strong bond in approximately twenty-four hours at room temperature. For typical physical properties, see Table 2.

TABLE 1 – Physical Properties of the Neoprene Seal

Property	ASTM Test Method	Requirement
Tensile strength, min.	D412	2000 psi
Elongation at break, min.	D412	250%
Hardness, Type A durometer	D2240	65 +/-5
Oven aging, 70h @ 212º F	D573	
Tensile strength, max.		20% loss
Elongation, max.		20% loss
Hardness, Type A duro.		0 to +10 pts
Oil swell, ASTM Oil No. 3 70h @ 212 º F		
Weight change, max.	D471	45%
Ozone resistance, 20% strain 70 hours aging, D573, 3 ppm in air	D1149	No cracks

TABLE 2 – Physical Properties of the High Strength Adhesive

Property	Requirement
Adhesive type	2-Component thixotropic paste
Tensile strength	4500 psi
Axial compression	8775 psi
Solids Hardness	5 MOHS
Pot life	45 minutes at 68°F
Flash point	> 200°F (both components)
Non-volatile content	100% Reactive
Initial cure @ 70º F	24 hours

PRODUCT	MIN. WIDTH IN (MM) **-50%**	MID-RANGE IN (MM)	MAX. WIDTH IN (MM) **+50%**	TOTAL MOVEMENT IN (MM) **100%**	DIM. A: IN (MM)	DIM. B: IN (MM)
J-100	0.50” (12.7)	1.00” (25.4)	1.50” (38.1)	1.00” (25.4)	1.00” (25.4)	1.19” (30.2)
J-150	0.75” (19.0)	1.50” (38.1)	2.25” (57.2)	1.50” (38.1)	1.50” (38.1)	1.88” (47.8)
J-200	1.00” (25.4)	2.00” (50.8)	3.00” (76.2)	2.00” (50.8)	2.00” (50.8)	2.44” (62.0)
J-250	1.25” (31.8)	2.50” (63.5)	3.75” (95.3)	2.50” (63.5)	2.50” (62.0)	2.94” (74.7)
J-300	1.50” (38.1)	3.00” (76.2)	4.50” (114.3)	3.00” (76.2)	3.00” (76.2)	3.94” (100.1)
J-400	2.00” (50.8)	4.00” (101.6)	6.00” (152.4)	4.00” (101.6)	4.00” (101.6)	4.50” (114.3)
J-500	2.50” (63.5)	5.00” (127.0)	7.50” (190.5)	5.00” (127.0)	5.00” (127.0)	5.50 (139.7)

J-Series & JP-Series
INSTALLATION INSTRUCTIONS

Two Part Epoxy Systems

Recommended Tools

- Electric grinder– 4" size wheel
- Soft wire wheel– 4" or 6" diameter
- Hand wire brushes
- Clean cloth rags
- Duct tape & paper or plastic
- 8" sharp knife– hack saw
- Miter box
- 2 x 5 margin trowel, paint brushes (disposable)
- Vacuum pump
- Nylon brush
- Gallon of denatured alcohol
- Cardboard for mixing epoxy on approx. 24" x 24"
- Paper cups for partial batch mixes

Pre-Installation Inspection

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

a) Irregularities in joint opening width exceeding 1/4"
b) Unsound concrete, joint opening side walls, and/or substrate
c) The top edge of the joint should be chamfered or have a radius of 1/4"
d) Moisture, oil, or other contaminates
e) Migrating cracks to the edge of the joint opening
f) Construction joints intersecting perpendicular to the joint opening.
g) Temperature range during the installation must remain between 40º F and 90° F. Temperatures above 90° F will cause the epoxy to set up too quickly or installing at substrate temperatures below 40º F will cause the cure to retard or not cure at all.
h) Proper sizing of seal depends on accurate field information such as providing the exact joint opening at a given temperature. Communication among the engineer, contractor and the manufacturer is necessary to determine proper seal sizing for the specific joint location.

Material Preparation

Preparation of Surfaces of Joint Stem Opening:

1. All surfaces to receive the seal profile should be dry, clean and sound concrete free of loose, cracked, delaminated, and spalled sections. Repair any sections that do not meet these criteria. The surfaces to receive the profile shall be sandblasted to exposed aggregate. Sandblasting will increase the surface area and enhance the bond capacity of the adhesive. The sandblast process will also remove all laitance and other bond- inhibiting contaminants. When sandblasting is not possible, disc grinding may be employed, after which an inspection of the surface shall be made to ensue it has a roughened surface.

EMS, Inc * 13311 Main Road, Akron, NY 14001 * 716-542-3991 * sales@eriemetal.com * www.eriemetal.com

Material Preparation

Preparation of Joint Interfaces:

1. Form or saw cut the groove/joint opening into the concrete to the recommended depth. Assure that the interfaces, whether concrete or steel, run parallel to each other for the length of the run. Walls should be plumb to the top surface of the concrete and should be spaced at a consistent width across the joint to within 1/4". Unsound concrete must be removed and repaired.

2. Clean dirt, stones, and standing water from the joint opening. Use a stiff bristled brush and compressed air to remove all dust. Sandblast the vertical walls of the groove to remove laitance and contaminants and increase bond area for the adhesive.

3. For steel angle or embedded plate surfaces, sandblast the surface to a "white metal" finish SSP-10. All rust and oxides must be removed from the surface to be bonded. Clean off sand blasting dust with compressed air and a clean white rag soaked in alcohol. Contact EMS for application to galvanized metal surface preparation.

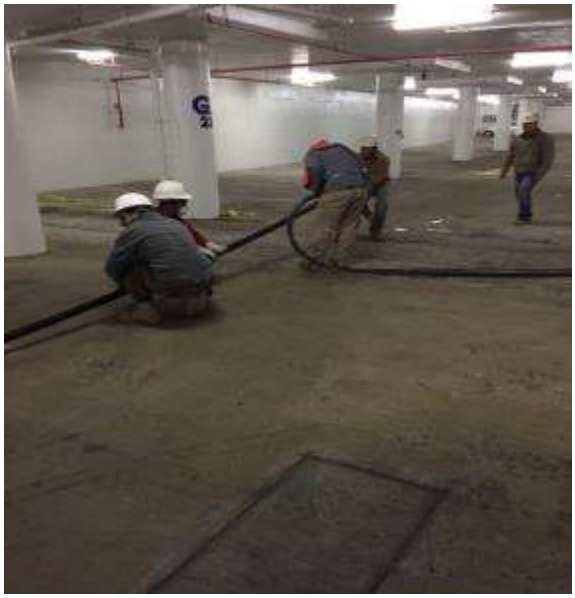
Material Installation

1. Immediately prior to installation, the interface walls should be blown out again.

2. Uncoil the seal and allow it to relax.

3. Apply the conditioning agent to a short section of the sidewall of the seal (5' or less). Wire brush the sidewalls to abrade the surfaces to receive the adhesive. When done properly, the shine of the surfaces will be removed and a roughened, dull, tacky finish will be obtained.

4. After the surface preparation of the seal is complete apply alcohol to the sidewalls of the seal and scrub vigorously into the ribs using a stiff nylon brush to clean out any residue which may impede the bond. The last step of the preparation process is a rinse of the prepared sides of the profile. Wipe prepared sidewalls with alcohol soaked rags. This will remove the last remnants of the cleaning process.



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Material Installation

5. Prior to installing the seal, try a dry run to see if you will need to draw a vacuum on the lower chambers of the seal to install it into the joint opening. Take a short section of seal about 3" long and squeeze and push it into the opening. You may find that the seal will insert into the joint snuggly without pushing away the glue on the sidewalls. If this is the case then it may not be necessary to draw a vacuum on the seal for the installation.

6. If necessary, draw a vacuum on the seal that matches the width of the joint stem opening. Neoprene sheet material and profile adhesive are provided to the contractor to make an end cap closure cover on one end of the seal. The opposite end is also capped with a neoprene sheet and an evacuation stem to draw the vacuum. *The vacuum is drawn from the bottom two chambers only; this forms a slight wedge shape and contains the glue during insertion.* Apply the adhesive to the sidewall ribs of the profile using a trowel or putty knife as the seal is installed. The ribs must be completely filled with adhesive.

Vacuum drawn from the bottom two chambers of the seal will create a "V" shape to the seal which will enhance the installation. These two illustrations show the JP-Seal being installed into the joint.

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Material Installation

7. Mix the adhesive to the manufacturer's specifications (see Section VI). Apply the adhesive to the sidewalls of the joint opening. Apply the adhesive to the sidewall ribs of the seal using a trowel or putty knife as the seal is installed. The ribs must be completely filled with adhesive.

8. Insert the profile in the gap to the proper depth. Check the ribs for proper adhesive coverage. Fill any voids. Excess adhesive above the ribbed area should be removed with a trowel or putty knife. Clean any excess drips or puddles of adhesive from the top of the seal. Remove any excess adhesive using a clean cloth rag soaked with denatured alcohol.

9. Allow the adhesive to cure twenty-four hours (at temperature 70 F.). Maximum bond strength (at room temperature) is usually achieved within forty-eight hours.

Field Quality Control

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

2. Manufacturer/installer shall supply guaranty/warranty to the owner authority, as required.

Adhesive Mixing Instructions

****There are two versions of our adhesive, the standard blend and a warm weather blend.****

CEBREG BONDER (XE-140) [Standard Blend]

1. Open the epoxies CEBREG BONDER (XE-140) - part "A" and CEBREG BONDER (XE-140) - part "B."

2. Depending on the amount of material desired, mix only to follow these rules; the mix ratio for the standard mix is 1:1 by volume for partial and full unit batches. For smaller batches use disposable paper cups of the same size to premeasured the glue components. After equal amounts are prepared place the contents onto a 4' square piece of cardboard or plywood.

3. Blend the two components with a margin trowel or wide putty knife. The black and gray colors should be thoroughly blended to make a dark gray color; there should be no streaks from partially mixed components.

4. AS WITH ANY EPOXY, DO NOT ALLOW THE MIXED EPOXY ADHESIVE TO SET IN A PILE OR CONFINED CONTAINER SUCH AS A PAIL. THIS WILL ACCELERATE THE CURE AND MATERIAL WILL PREMATURELY HARDEN DUE TO THE THERMAL REACTION OF THE TWO COMPONENTS.

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Adhesive Mixing Instructions

****There are two versions of our adhesive, the standard blend and a warm weather blend.****

CEBREG WW [Warm Weather Blend]

1. Open the epoxies CEBREG BONDER (XE-140) - part "A" and CEBREG WW – part "B"

2. Depending on the amount of material desired, mix only to follow these rules; the mix ratio for the warm weather is 1.5:1 by volume for partial and full unit batches. For smaller batches use disposable paper cups of the same size to premeasured the glue components. After equal amounts are prepared place the contents onto a 4' square piece of cardboard or plywood. An example of a CEBREG WW partial mix, use the paper cups, fill 3 cups of "part A" and 2 cups of "part B" this will equal a 1.5:1 ration by volume.

3. Blend the two components with a margin trowel or wide putty knife. The black and gray colors should be thoroughly blended to make a dark gray color; there should be no streaks from partially mixed components.

4. AS WITH ANY EPOXY, DO NOT ALLOW THE MIXED EPOXY ADHESIVE TO SET IN A PILE OR CONFINED CONTAINER SUCH AS A PAIL. THIS WILL ACCELERATE THE CURE AND MATERIAL WILL PREMATURELY HARDEN DUE TO THE THERMAL REACTION OF THE TWO COMPONENTS.

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SPECIFICATION Division 07900

Two-Part Epoxy System J-Series Seal Profiles

PART 1 - GENERAL

1.01 Summary

A. Section Includes: Furnishing of all materials, labor, and equipment necessary for the surface preparation and the installation of the sealed expansion joints in accordance with the details shown on the plans and these specifications. The designs for the deck condition utilize an extruded compression seal profile bonded in place with a strong, two-component, structural epoxy adhesive. The design is arranged to flex in response to joint movement and to seal against the intrusion of deck drainage.

B. Related Sections:
   1. Section 03300 - Cast-in-place concrete
   2. Section 07900 - Waterproofing, including sealants and coatings

1.02 References

A. American Society for Testing and Materials (ASTM):
   1. ASTM D412
   2. ASTM D471
   3. ASTM D573
   4. ASTM D1149
   5. ASTM D2240

1.03 Quality Assurance

A. Application Qualifications: The manufacturer of the expansion joint seal will provide a technically qualified representative who will train the installer on the proper techniques for installing the seal. 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 100 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 40° F or expected to fall below 40° F. Do not proceed with the work when temperatures are above 90° F, unless approved in writing by the manufacturer.

F. Manufacturer will have a minimum of five (5) years experience specializing in expansion joint systems for similar applications.

1.04 Submittals

A. Submit in accordance with 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, and installation procedures (specifically the mixing and application of the structural adhesive) 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

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

1.05 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.

1.06 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

PART 2 – PRODUCTS

2.01 Manufacturers

A. Two-Part Epoxy Seal System components will be designated as the following:

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

   2. Structural adhesive as supplied by EMS, Inc., 13311 Main Road, NY 14001 Phone (716) 542-3991 Fax (716) 542-3996

   3. Seal cleaner/Conditioner as supplied by EMS, Inc., 13311 Main Road, Akron, NY 14001 Phone: (716) 542-3991 Fax: (716) 542-3996

2.02 Components and Materials

A. Compression Seal Profile: The extruded profile will be made from polychloroprene (neoprene). The material will have a minimum 2,000-psi tensile strength requirement and 250% elongation at break. [See manufacturer's data sheet entitled "Two-Part Epoxy Expansion Joint System - J and JP - Series Seals" for more information.] The profile will be structured so that its cross-section features a multi-celled, web design that exerts a constant pressure on the joint wall interfaces. The J-Series has +/- 50% movement capability, a total of 100% movement.

B. Structural Adhesive: The adhesive is a high strength, two-part, modified, epoxy-based material. It is 100% reactive and will develop a strong bond in approximately eight to ten hours at room temperature. A full cure will develop within twenty-four hours at 70° F. It will have the following properties:

Typical Physical Property	Resin Part A	Hardener Part B
Appearance	Gray	Black Paste
Viscosity (cps)*	300,000-700,000	300,000-700,000
Non-Volatile Content**	100% Reactive	100% Reactive
Weight/gallon	2.2 lb. +/-	2.2 lb. +/-
Flash Point	>200° F	no flash point
Shelf Life (from date of shipment, unopened container @ 40°F to 80°F)	1 Year	1 Year

Note the following:
(*) The resin part is measured using a Brookfield HBF Viscometer at 77+/- 2°F with a T-bar "D" spindle at 5rpm with Heliopath stand (undisturbed sample).
(**) This is not routinely measured. Test results may vary with temperature. Consult EMS for details.

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) which might be detrimental to the installation or performance of the expansion joint. Coordinate the installation with related work.

3.02 Preparation of Surfaces of the Joint Opening in Deck

A. All surfaces to receive the J compression seal profile will be dry, clean, sound concrete, free of loose, cracked, delaminated and spalled sections. Repair any sections that do not meet these criteria. The surfaces to receive the J compression seal profile will be sandblasted to exposed aggregate. Sandblasting increases surface area to increase bond capacity of the adhesive and removes all laitance and other bond-inhibiting contaminants.

3.03 Preparation of Joint Interfaces

A. Form or saw cut the groove/joint opening into the concrete to the recommended depth shown. Assure that the interfaces, whether concrete or steel, run parallel to each other for the length of the run. Walls should be plumb to the top surface of the concrete and spaced at a consistent width across the joint. Unsound concrete must be removed and repaired.

B. Clean dirt, stones, and standing water from the joint opening. Use a stiff bristled brush and compressed air to remove all dust. Sandblast the vertical walls of the groove to remove laitance and contaminants, and increase bond area for the adhesive.

3.04 Installation of the Seal Profile

A. Immediately prior to installation, the interface walls should be blown out again.

B. Uncoil the seal and allow it to relax. Apply the conditioner to the sidewalls of the seal and use a wire-brush to abrade the surfaces of the seal that will receive the two-part epoxy adhesive. When the process is done properly, the shine of the surfaces will be removed. A roughened, dull tacky finish will be obtained.

C. Mix the adhesive to the manufacturer's specifications (1:1 ratio by weight or volume). Apply the adhesive to the joint side walls, interfaces and into the ribs of the seal profile using a 2" margin trowel. The ribs must be completely filled with adhesive.

D. Insert the profile in the gap to the proper depth. Check the ribs for proper adhesive coverage, filling any voids. If joint is too tight, draw a vacuum on the bottom two chambers to form a "V" shape which will drive the seal into the proper depth, release the vacuum on the seal. Remove any additional adhesive using organic solvents.

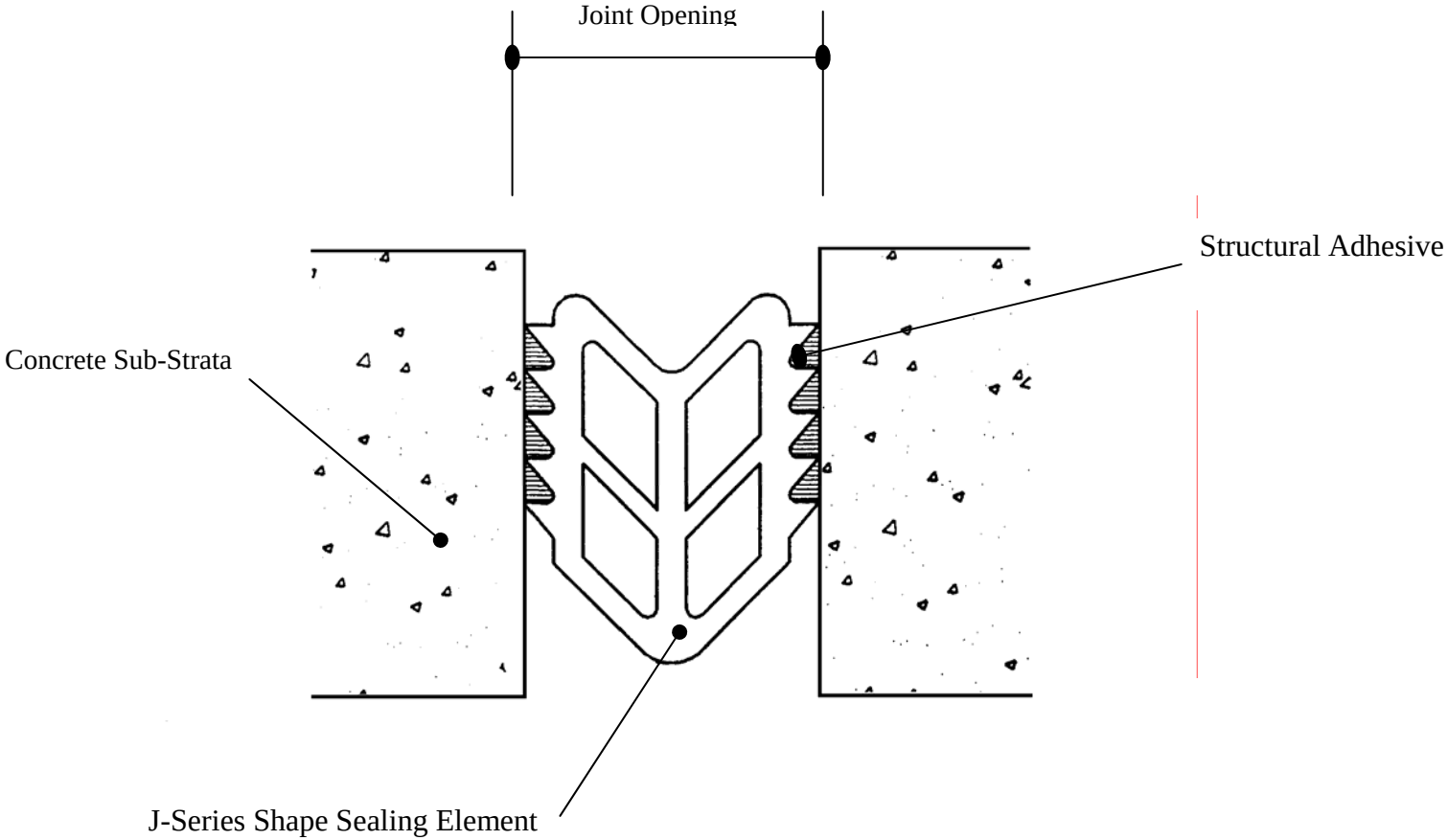
E. Allow the adhesive to cure eight to ten hours (at room temperature) less in higher temperatures. Maximum bond strength (at room temperature) is usually achieved within twenty-four hours.

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



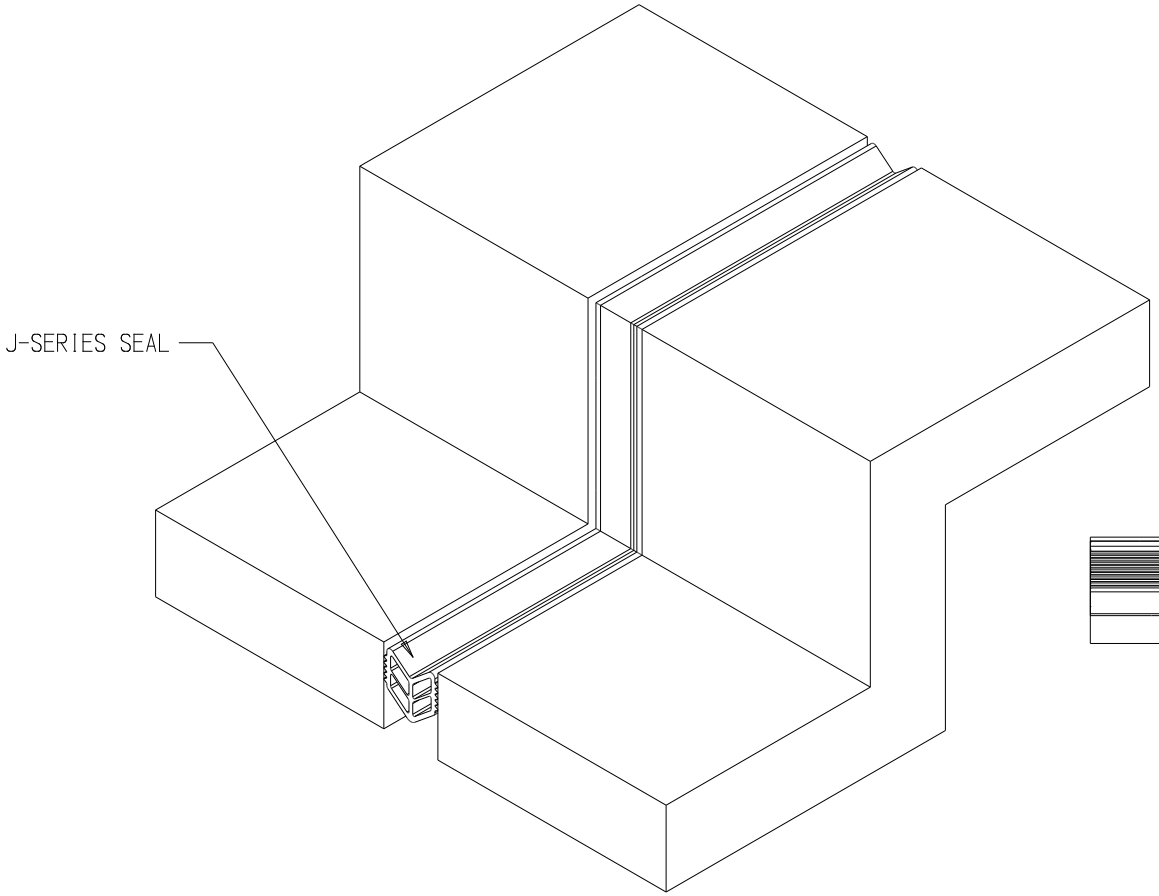
NO	Description	Date	By

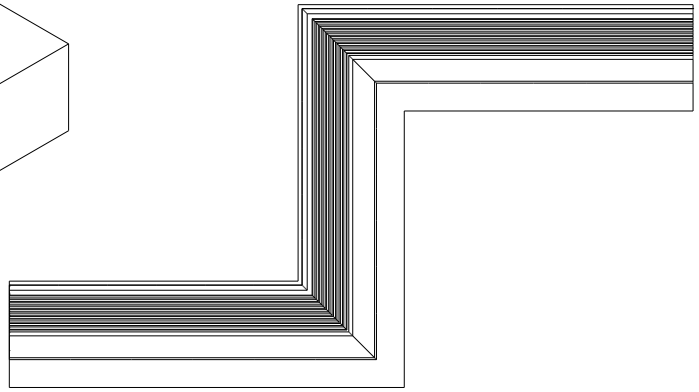
ERIE METAL SPECIALTIES
13311 Main Road • Akron • New York • 14001
Phone: (716) 542-3991 • Fax: (716) 542-3996 • E-mail: sales@eriemetal.com

PROJECT:

TITLE: J-SERIES STYLE SEALING ELEMENT

Detailed by: AWG	Date: 10/9/00
Checked By: LJB	Date: 10/21/00
Scale: NTS	EMS Job #:
Sheet No.: 1 of 1	Drawing No.: CD-101





ERIE METAL SPECIALTIES

Detailed by: GMH	Date: 6-29-07
Checked by:	Date:
Scale: NTS	EMS Job #:
Sheet #:	Drawing #:

PROJECT:

TITLE: J-SERIES - CURB DETAIL

MATERIAL SAFETY DATA SHEET

SECTION I – MATERIAL IDENTIFICATION

MATERIAL NAME: Two-Part Epoxy System Adhesive 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 – HAZARDOUS INGREDIENTS

Hazardous Ingredients	CAS Number	WT%	Exposure Limits OSHA (PEL/TWA)	ACVGIH(TLV/TWA)
Epoxy Resins	25085-99-8	60 to 100	n/a	n/a
Nepheline Syenite	37244-96-5	10 to 30	5	10
Aliphatic Glycidyl Ether	17557-23-2	10 to 30	n/a	n/a
Fumed Amorphous Silica	7631-86-9	3 to 7	n/a	n/a
Glycerol	56-81-5	0.5 to 1.5	10	n/a
Ferric Oxide	1317-61-9	0.1 to 1.0	10	n/a

SECTION III – HAZARDS IDENTIFICATION

Potential Health Hazards – Acute
Eye: Will result in eye irritation
Skin: May cause dermatitis
Inhalation: Will result in respiratory tract irritation
Ingestion: May cause abdominal pain, vomiting, and diarrhea

Potential Health Effects – Chronic N/A

Carcinogenicity:	NO	Teratogenicity:	N/A
Sensitization:	Yes; skin and respiratory	Reproductive Toxicity:	N/A
Mutagenicity:	N/A	Synergistic Products:	None Known

SECTION IV – FIRST AID MEASURES

Eye: Immediately flush with plenty of clean water for at least 15 minutes and get immediate medical attention.
Skin: Remove contaminated clothing. Clean affected area(s) thoroughly with soap and water.
Inhalant: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration.
Ingestion: Induce vomiting if large amounts are ingested. Transport to a medical facility

SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST

MATERIAL SAFETY DATA SHEET

SECTION V – FIRE FIGHTING MEASURES:

Flammability: No
Flash Point (set-a-flash closed cup): 177 deg. C
Extinguishing Media: Extinguish with water spray, water fog, CO2 or foam.
Hazard Combustion Products: Carbon monoxide, carbon dioxide, phenolics
Fire Fighting Instructions: Closed containers may rupture violently when exposed to heat. Irritating vapors may be released during a spill. Combustion by-products may be hazardous. Use water only to cool containers to disperse vapors. Do not incinerate closed containers. Do not enter confined fire space without full bunker gear including a positive pressure, NIOSH approved, self contained breathing apparatus.

SECTION VI – REACTIVITY DATA:

STABILITY: Stable
DECOMPOSITION PRODUCTS: Not available
HAZARDOUS POLYMERIZATION: May occur with greater than 1 pound of amines
CONDITIONS TO AVOID: N/A

SECTION VII – TOXICOLOGICAL INFORMATION:

Route of Entry: Skin contact, eye contact, skin absorption, inhalation, ingestion

Components:	Oral LD 50 (Rat)	Inhalation LC50 (Rat)
Epoxy Resins	5000 mg/kg	oral
Nepheline Syenite	n/a	n/a
Aliphatic Glycidyl Ether	4500 mg/kg	oral
Fumed Amorphous Silica	n/a	n/a
Glycerol	4250 mg/kg	oral
Ferric Oxide	n/a	n/a

SECTION VIII– HANDLING & STORAGE PRECAUTIONS:

HANDLING: Avoid inhalation, skin and eye contact. Practice good personal hygiene. Wash repeatedly with soap and water during the work day.
VENTILATION: Provide general dilution or local exhaust in volume and pattern to keep TLV of hazardous ingredients below acceptable limits.
PERSONAL PROTECTION: Wear clean, long-sleeved, body-covering clothing. Use impervious gloves, chemical splash goggles and full face shield. When respiratory protection is required, use an approved air purifying respirator.
STORAGE: Store containers tightly closed with adequate ventilation in a cool dry area.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: black liquid
ODOR: Epoxy
BOILING POINT: 146 deg. C
VAPOR PRESSURE (m/HG): n/a
VAPOR DENSITY: (Air = 1): n/a
SOLUBILITY IN WATER: slight
SPECIFIC GRAVITY (H20=1): 0.13
EVAPORATION RATE: (n-Butyl Acetate = 1): n/a
% VOLITILES BY VOLUME: 0.00

MATERIAL SAFETY DATA SHEET

SECTION X – ACCIDENTAL RELEASE MEASURES:

SPILL: Remove all sources of ignition (flames, sparks, etc.) Provide adequate ventilation. Avoid prolonged breathing of vapors. Remove to a container or absorb with clay, diatomaceous earth or other suitable inert absorbent.

DISPOSAL: Dispose of in accordance with all federal, state and local regulations. If uncertain of local requirements, contact the proper environmental authorities for information on waste disposal.

SECTION XI – PROPER D.O.T. SHIPPING INFORMATION:

Not regulated
Two-Part Epoxy System Adhesive Part A

SECTION XII – U.S. REGULATORY INFORMATION:

OSHA: This material is hazardous by definition of Hazardous Communications Standard (29 DFR 1910.1200)
SARA Title III:
Section 311/312 hazard categories acute health, delayed health, fire.

SECTION XIII – U.S. REGULATORY INFORMATION:

This MSDS complies with 20 CRF 1910.1200 (THWE HAZARD COMMUNICATION STANDARD). Although the information and recommendations set forth herein (hereinafter "information") are presented in good faith and believed to be correct as of the date hereof, Erie Metal Specialties, Inc. makes no representations as to the completeness or accuracy thereof. Information is supplied upon the condition that persons receiving same will make their own determination as to its suitability for their purposes prior to use. In no event will Erie Metal Specialties, Inc. be responsible for damages of any nature whatsoever resulting from the use of, misuse or reliance upon information. No representations or warranties, either expressed or implied, or merchantability, fitness for a particular purpose or any other nature are made hereunder with respect to information or the product to which information refers. Regulatory requirements are subject to change and may differ from one location to another. It is the buyer's responsibility to ensure its activities comply with Federal, State or Provincial, and local laws and regulations.

ISSUE DATE:……..02/23/09 SUPERCEDES:…….01/05/09

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

MATERIAL SAFETY DATA SHEET

SECTION I – MATERIAL IDENTIFICATION

MATERIAL NAME: Two-Part Epoxy Adhesive 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 – HAZARDOUS INGREDIENTS

Hazardous Ingredients	CAS Number	WT%	Exposure Limits OSHA (PEL/TWA)	ACVGIH(TLV/TWA)
Polyamide Resin	68410-23-1	60 to 100	n/a	n/a
Nepheline Syenite	37244-96-5	15 to 40	5	10
N-Aminoethylpiperazine	140-31-8	10 to 30	n/a	n/a
Bisphenol “A”	80-05-7	10 to 30	n/a	n/a
Fumes Silica	67762-90-7	3 to 7	n/a	n/a
Benzyldimethylamine	103833	3 to 7	n/a	n/a
Amino Silane	1760-2403	1 to 5	n/a	n/a
Glycerol	56-81-5	1 to 5	10	n/a
Organophillic Clay	71011-26-2	1 to 5	15	n/a
Propylene Carbonate	108-32-7	0.1 to 1.0	n/a	n/a

SECTION III – HAZARDS IDENTIFICATION

Potential Health Hazards – Acute

Eye: Will result in severe eye irritation and burns.
Skin: Will result in severe skin irritation and burns.
Inhalation: May result in severe respiratory tract irritation and burns.
Ingestion: Harmful if swallowed. May lead to gastrointestinal irritation and ulceration.

Potential Health Effects – Chronic
N/A

Carcinogenicity:	NO	Teratogenicity:	N/A
Sensitization:	YES; Skin and respiratory	Reproductive Toxicity:	N/A
Mutagenicity:	N/A	Synergistic Products:	None Known

SECTION IV – FIRST AID MEASURES

Eye: Immediately flush with plenty of clean water for at least 15 minutes and get immediate medical attention.
Skin: Remove contaminated clothing. Clean affected area(s) thoroughly with soap and water.
Inhalant: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration.
Ingestion: DO NOT INDUCE VOMITING. Administer large amounts of milk or water if available. Transport to a medical facility

SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST

MATERIAL SAFETY DATA SHEET

SECTION V – FIRE FIGHTING MEASURES:

Flammability: No
Flash Point (set-a-flash closed cup): 110
Extinguishing Media: Extinguish with water fog, CO2, dry chemical or foam.
Hazard Combustion Products: Carbon monoxide, carbon dioxide, oxides of nitrogen
Fire Fighting Instructions: Closed containers may rupture violently when exposed to heat. Irritating vapors may be released during a spill. Combustion by-products may be hazardous. Use water only to cool containers to disperse vapors. Do not incinerate closed containers. Do not enter confined fire space without full bunker gear including a positive pressure, NIOSH approved, self-contained breathing apparatus.

SECTION VI – REACTIVITY DATA:

STABILITY: Stable
DECOMPOSITION PRODUCTS: Not available
HAZARDOUS POLYMERIZATION: Will Not Occur
CONDITIONS TO AVOID: n/a

SECTION VII – TOXICOLOGICAL INFORMATION:

Route of Entry: Skin contact, eye contact, skin absorption, inhalation

Components:	Oral LD 50 (Rat)	Inhalation LC50 (Rat)
Polyamide Resin	16000 mg/kg	n/a
Nepheline Syenite	n/a	n/a
N-Aminoethylpeperazine	2150 mg/kg	n/a
Bisphenol “A”	4100 mg/kg	n/a
Fumes Silica	5 mg/kg	n/a
Benzyldimethylamine	n/a	n/a
Amino Saline	n/a	n/a
Glycerol	4250 mg/kg	n/a
Organophillic Clay	n/a	n/a
Propylene Carbonate	29000	n/a

SECTION VIII– HANDLING & STORAGE PRECAUTIONS:

HANDLING: Avoid inhalation, skin and eye contact. Practice good personal hygiene. Wash repeatedly with soap and water during the work day.
VENTILATION: Provide general dilution or local exhaust in volume and pattern to keep TLV of hazardous components below acceptable limits.
PERSONAL PROTECTION: Wear clean, long-sleeved, body-covering clothing. Use impervious gloves, chemical splash goggles and full-face shield. When respiratory protection is required, use an approved air-purifying respirator.
STORAGE: Store containers tightly closed with adequate ventilation in a cool dry area.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: Light Straw
ODOR: Ammoniacal
BOILING POINT: n/a
VAPOR PRESSURE (m/HG): n/a
VAPOR DENSITY: (Air = 1): n/a
SOLUBILITY IN WATER: slight
SPECIFIC GRAVITY (H20=1): 0.12
EVAPORATION RATE: (n-Butyl Acetate = 1): Not applicable
% VOLITILES BY VOLUME: 0.00

MATERIAL SAFETY DATA SHEET

SECTION X – ACCIDENTAL RELEASE MEASURES:

SPILL: Remove all sources of ignition (flames, sparks, etc.). Provide adequate ventilation. Avoid prolonged breathing of vapors. Remove to a container or absorb with clay, diatomaceous earth or other suitable inert absorbent.

DISPOSAL: Dispose of in accordance with all federal, state and local regulations. If uncertain of local requirements, contact the proper environmental authorities for information on waste disposal.

SECTION XI – PROPER D.O.T. SHIPPING INFORMATION:

Polyamines, liquid, corrosive, N.O.S. (Diethylenetriamine) Class 8, UN 2735, PG III

SECTION XII – U.S. REGULATORY INFORMATION:

OSHA: This material is hazardous by definition of Hazardous Communications Standard (29 DFR 1910.1200)
SARA Title III: Section 311/312-hazard categories acute health, delayed health, fire.

SECTION XIII – U.S. REGULATORY INFORMATION:

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

MATERIAL SAFETY DATA SHEET

SECTION I – MATERIAL IDENTIFICATION

MATERIAL NAME: Conditioner

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 – HAZARDOUS INGREDIENTS

Hazardous Ingredients	CAS Number	WT%	Exposure Limits OSHA (PEL/TWA)	ACVGIH(TLV/TWA)
Ethyl Acetate	n/a	60 to 100	n/a	n/a
Benzoyl Peroxide	94-36-0	5 to 10	n/a	5
Non Hazardous Components	n/a	5 to 10	n/a	n/a

SECTION III – HAZARDS IDENTIFICATION

Potential Health Hazards – Acute

Eye: Will result in eye irritation.

Skin: Will result in skin irritation.

Inhalation: High vapor concentration may produce nausea, vomiting, headaches, dizziness, unconsciousness and asphyxia in central nervous system.

Ingestion: May cause abdominal pain, vomiting and diarrhea.

Potential Health Effects – Chronic
Overexposure nay result in damage to kidney and liver.

Carcinogenicity:	N/A	Teratogenicity:	N/A
Sensitization:	Yes; Skin and Respiratory	Reproductive Toxicity:	N/A
Mutagenicity:	N/A	Synergistic Products:	None Known

SECTION IV – FIRST AID MEASURES

Eye: Immediately flush with plenty of clean water for at least 15 minutes and get immediate medical attention.
Skin: Remove contaminated clothing. Clean affected area(s) thoroughly with soap and water.
Inhalant: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration.
Ingestion: DO NOT INDUCE VOMITING. Administer large amounts of milk or water if available. Transport to a medical facility

SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST

MATERIAL SAFETY DATA SHEET

SECTION V – FIRE FIGHTING MEASURES:

Flammability: Yes
Flash Point (set-a-flash closed cup): -4 degrees C
Extinguishing Media: Extinguish with water spray, water fog, dry chemical, CO2 or foam.
Hazard Combustion Products: Carbon monoxide, carbon dioxide biphenyls.

Fire Fighting Instructions: Closed containers may rupture violently when exposed to heat. Irritating vapors may be released during a spill. Combustion by-products may be hazardous. Use water only to cool containers to disperse vapors. Do not incinerate closed containers. Do not enter confined fire space without full bunker gear including a positive pressure, NIOSH approved, self-contained breathing apparatus.

SECTION VI – REACTIVITY DATA:

STABILITY**:** Avoid Excessive Heating Over Long Periods of Time
DECOMPOSITION PRODUCTS: N/A
HAZARDOUS POLYMERIZATION: May occur
CONDITIONS TO AVOID: Heat, open flames and sparks

SECTION VII – TOXICOLOGICAL INFORMATION:

Route of Entry: Skin contact, eye contact, skin absorption, inhalation

Components:	Oral LD 50 (Rat)	Inhalation LC50 (Rat)
Benzoyl Peroxide:	950 mg/kg	n/a
Ethyl Acetate:	11000 mg/kg	n/a

SECTION VIII– HANDLING & STORAGE PRECAUTIONS:

HANDLING: Avoid inhalation, skin and eye contact. Practice good personal hygiene. Wash repeatedly with soap and water during the work day.
VENTILATION: Provide general dilution or local exhaust in volume and pattern to keep TLV of hazardous ingredients below acceptable limits.
PERSONAL PROTECTION: Wear clean, long-sleeved, body-covering clothing. Use impervious gloves, chemical splash goggles and full-face shield. When respiratory protection is required, use an approved air-purifying respirator.
STORAGE: Store containers tightly closed with adequate ventilation in a cool dry area.

SECTION IX - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: waterlike liquid
ODOR: Pungent
BOILING POINT: 77 deg C
VAPOR PRESSURE (m/HG): 100.0
VAPOR DENSITY: (Air = 1): 3.0
SOLUBILITY IN WATER: slight
SPECIFIC GRAVITY (H20=1): 0.09
EVAPORATION RATE: (n-Butyl Acetate = 1): Not applicable
% VOLITILES BY VOLUME: 91.75

MATERIAL SAFETY DATA SHEET

SECTION X – ACCIDENTAL RELEASE MEASURES:

SPILL: Remove all sources of ignition (flames, sparks, etc.). Provide adequate ventilation. Avoid prolonged breathing of vapors. Remove to a container or absorb with clay, diatomaceous earth or other suitable inert absorbent.

DISPOSAL: Dispose of in accordance with all federal, state and local regulations. If uncertain of local requirements, contact the proper environmental authorities for information on waste disposal.

SECTION XI – PROPER D.O.T. SHIPPING INFORMATION:

Ethyl Acetate	UN 1173
Benzoyl Peroxide	UN 3106
Non-Hazardous Components	N/A

SECTION XII – U.S. REGULATORY INFORMATION:

OSHA: This material is hazardous by definition of Hazardous Communications Standard (29 DFR 1910.1200)
SARA Title III: Section 311/312-hazard categories acute health, delayed health, fire.

SECTION XIII – U.S. REGULATORY INFORMATION:

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ISSUE DATE:……..02/23/09 SUPERCEDES:……1/01/09

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