

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Name : 12000HV Epoxy Hardener
CAS No : None - mix
Product code : 50241MB

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture : Epoxy resin: hardener

1.3. Details of the supplier of the safety data sheet

Encore Rail Systems, Inc.
2300 West Midway Blvd.
Broomfield, CO, CO 80020 USA
EMERGENCY: 800-424-9300 or 703-527-3887 Chemtrec
INFORMATION: PH 303-936-3641
FAX 303-936-3640
email: <http://www.EncoreRS.com/SDS.aspx>

1.4. Emergency telephone number

Emergency number : 800-424-9300 or 703-527-3887 (Chemtrec)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Acute Tox. 4 (Oral)	H302 - Harmful if swallowed
Acute Tox. 4 (Inhalation:vapour)	H332 - Harmful if inhaled
Skin Corr. 1A	H314 - Causes severe skin burns and eye damage
Skin Sens. 1	H317 - May cause an allergic skin reaction
Muta. 2	H341 - Suspected of causing genetic defects
Repr. 2	H361 - Suspected of damaging fertility or the unborn child.
STOT RE 2	H373 - May cause damage to organs through prolonged or repeated exposure
Aquatic Acute 1	H400 - Very toxic to aquatic life
Aquatic Chronic 3	H412 - Harmful to aquatic life with long lasting effects

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :



GHS05

GHS07

GHS08

GHS09

Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H302+H332 - Harmful if swallowed or if inhaled
H314 - Causes severe skin burns and eye damage
H317 - May cause an allergic skin reaction
H341 - Suspected of causing genetic defects
H361 - Suspected of damaging fertility or the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure
H400 - Very toxic to aquatic life
H412 - Harmful to aquatic life with long lasting effects

Precautionary statements (GHS-US) :

P201 - Obtain special instructions before use
P202 - Do not handle until all safety precautions have been read and understood
P260 - Do not breathe mist/vapors/spray.
P264 - Wash all contact areas thoroughly after handling
P270 - Do not eat, drink or smoke when using this product
P271 - Use only outdoors or in a well-ventilated area
P272 - Contaminated work clothing must not be allowed out of the workplace
P273 - Avoid release to the environment

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

P280 - Wear protective gloves/protective clothing/eye protection.
P301+P330+P331 - If swallowed: rinse mouth. Do NOT induce vomiting
P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P308+P313 - If exposed or concerned: Get medical advice/attention
P310 - Immediately call a POISON CENTER or doctor/physician
P321 - Specific treatment: See SDS Section 4.
P330 - Rinse mouth
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
P363 - Wash contaminated clothing before reuse
P391 - Collect spillage
P405 - Store locked up
P501 - Dispose of contents/container to special waste facility in accordance with regional/national regulations.

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

18.3 percent of the mixture consists of ingredient(s) of unknown acute toxicity (Inhalation (Vapours))

SECTION 3: Composition/Information on ingredients

3.1. Substance

Not applicable

3.2. Mixture

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Name	Product identifier	%	GHS-US classification
Nonyl phenol	(CAS No) 84852-15-3	15 - 30	Acute Tox. 4 (Oral), H302 Skin Corr. 1A, H314 Repr. 2, H361 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Aliphatic Amine Blend	(CAS No) UNKNOWN, MIX	15-30	Acute Tox. 4 (Dermal), H312 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317
2,4,6-Tri(dimethylaminomethyl) phenol	(CAS No) 90-72-2	3 - 8	Acute Tox. 4 (Oral), H302 Skin Corr. 1C, H314 Aquatic Acute 3, H402
Benzene-1,3-dimethanamine	(CAS No) 1477-55-0	3 - 8	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Acute Tox. 2 (Inhalation:vapour), H330 Skin Corr. 1A, H314 Eye Dam. 1, H318 Aquatic Acute 3, H402 Aquatic Chronic 3, H412
Phenol	(CAS No) 108-95-2	3 - 8	Acute Tox. 3 (Oral), H301 Acute Tox. 3 (Dermal), H311 Acute Tox. 1 (Inhalation:vapour), H330 Skin Corr. 1B, H314 Muta. 2, H341 STOT RE 2, H373 Aquatic Acute 3, H402
Ethyl alcohol	(CAS No) 64-17-5	1-3	Flam. Liq. 2, H225 Skin Irrit. 2, H315 Eye Irrit. 2B, H320 STOT SE 3, H335
Calcium nitrate	(CAS No) 13477-34-4	1-3	Ox. Sol. 3, H272 Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2B, H320
Bisphenol-A	(CAS No) 80-05-7	<1	Eye Dam. 1, H318 Skin Sens. 1, H317 STOT SE 3, H335 Aquatic Acute 2, H401
Triethylenetetramine	(CAS No) 112-24-3	<1	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Skin Corr. 1B, H314 Skin Sens. 1, H317
Diethylenetriamine	(CAS No) 111-40-0	< 1	Acute Tox. 4 (Oral), H302 Acute Tox. 4 (Dermal), H312 Skin Corr. 1B, H314 Skin Sens. 1, H317 Aquatic Acute 3, H402
Aminoethylpiperazine	(CAS No) 140-31-8	< 1	Acute Tox. 4 (Oral), H302 Acute Tox. 3 (Dermal), H311 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Aquatic Acute 3, H402 Aquatic Chronic 3, H412

Full text of H-phrases: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

- First-aid measures general : IF exposed or concerned: Get medical advice/attention. Call a physician immediately. If medical advice is needed, have product container or label at hand.
- First-aid measures after inhalation : When symptoms occur: go into open air and ventilate suspected area. Move the affected person away from the contaminated area and into the fresh air. Call a poison center/doctor/physician if you feel unwell. Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice/attention. If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.

Encore Rail Systems, Inc. 1200HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

- First-aid measures after skin contact : Dispose of contaminated leather articles. Wash clothing frequently. Keep work clothing separately. Rinse skin with plenty of water or shower. Remove/Take off immediately all contaminated clothing. Get immediate medical advice/attention. Wash skin with plenty of water. Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Wash contaminated clothing before reuse.
- First-aid measures after eye contact : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention. Rinse eyes with water as a precaution.
- First-aid measures after ingestion : Rinse mouth. Do NOT induce vomiting. Call a physician immediately.

4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries : Symptoms may be delayed. Caustic burns/corrosion of the skin. Corrosion of the eye tissue.
- Symptoms/injuries after inhalation : Irritation of the eye tissue. Irritation of the nasal mucous membranes. Irritation of the respiratory tract. Dry/sore throat. EXPOSURE TO HIGH CONCENTRATIONS: Respiratory difficulties. Possible inflammation of the respiratory tract.
- Symptoms/injuries after skin contact : May cause an allergic skin reaction. Skin rash/inflammation. Allergic skin rash. Blisters. Burns. Slow-healing wounds. Repeated exposure to this material can result in absorption through skin causing significant health hazard.
- Symptoms/injuries after eye contact : Causes serious eye damage. Corrosion of the eye tissue. Inflammation/damage of the eye tissue. Lacrimation. Product vapor can cause lacrimation, conjunctivitis, and corneal edema when absorbed into the tissue of the eye. Corneal edema may give rise to a perception of "blue haze" or "fog" around lights. The effect is transient and has no known residual effects. Visual disturbances. Mechanical irritation.
- Symptoms/injuries after ingestion : Abdominal pain. Burns to the gastric/intestinal mucosa. No effects known. Cramps/uncontrolled muscular contractions. Nausea.
- Symptoms/injuries upon intravenous administration : No supplementary information available.
- Chronic symptoms : Chronic exposure can cause liver and kidney damage.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray. Dry powder. Foam. Carbon dioxide.

5.2. Special hazards arising from the substance or mixture

- Fire hazard : Combustible liquid. Irritating and/or toxic gases or fumes likely if involved in fire or exposed to extreme heat.
- Reactivity : The product is non-reactive under normal conditions of use, storage and transport.

5.3. Advice for firefighters

- Firefighting instructions : Use water moderately and if possible collect or contain it.
- Protection during firefighting : Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.
- Specific methods : Do not use a solid water stream as it may scatter and spread fire.
- Other information : On heating/burning: release of harmful/irritant gases/vapors.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

- Protective equipment : Rubber apron, boots. Gloves. Combined gas/dust mask with filter type.
- Emergency procedures : No open flames, no sparks, and no smoking. Do not breathe mist/vapors/spray. Mark the danger area. Evacuate unnecessary personnel. Soak up small spill with inert solids. Avoid contact with skin, eyes and clothing.

6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. Impermeable boots and protective equipment. Supplied air respirator if working in a confined area. Use a respirator with a vapor cartridge. For further information refer to section 8: "Exposure controls/personal protection".
- Emergency procedures : Evacuate and limit access. Ventilate area. Stop release.

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

- For containment : Collect spillage.
- Methods for cleaning up : Notify authorities if product enters sewers or public waters. Cover spill with non combustible material, e.g.: sand/earth or powdered limestone. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. On land, sweep or shovel into suitable containers. Clean contaminated surfaces with a soap solution.
- Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Additional hazards when processed : When heated, material emits irritating fumes.
- Precautions for safe handling : Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear personal protective equipment. Avoid contact with skin and eyes. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Do not breathe mist/vapors/spray. Use only outdoors or in a well-ventilated area. Avoid prolonged and repeated contact with skin. Avoid contact with skin, eyes and clothing. Remove contaminated clothing immediately. Use personal protective equipment as required. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.
- Hygiene measures : Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

- Storage conditions : Store locked up. Store in a well-ventilated place. Keep cool. Keep container tightly closed. Do not expose to temperatures exceeding 50 °C/ 122 °F. Store in a dry place. Keep container tightly closed to avoid moisture absorption and contamination. Store indoors in closed containers with closure in upper position. Store in accordance with local/national regulations.
- Incompatible materials : concentrated strong acids.
- Maximum storage period : 12 months
- Storage temperature : 20 - 40 °C
- Storage area : Store indoors in closed containers with closure in upper position.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Benzene-1,3-dimethaneamine (1477-55-0)		
ACGIH	ACGIH Ceiling (mg/m ³)	0.1 mg/m ³ (m-Xylene alfa, alfa'-diamine; USA; Momentary value; TLV - Adopted Value)
Phenol (108-95-2)		
ACGIH	ACGIH TWA (ppm)	5 ppm
ACGIH	Remark (ACGIH)	URT irr; lung dam; CNS impair
OSHA	OSHA PEL (TWA) (mg/m ³)	19 mg/m ³
OSHA	OSHA PEL (TWA) (ppm)	5 ppm
Diethylenetriamine (111-40-0)		
ACGIH	ACGIH TWA (ppm)	1 ppm (Diethylene triamine; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)

8.2. Exposure controls

- Appropriate engineering controls : Ensure good ventilation of the work station.

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Personal protective equipment : Insufficient ventilation: wear respiratory protection. High vapor/gas concentration: self-contained respirator.



Materials for protective clothing : butyl rubber. chloroprene rubber. nitrile rubber.
Hand protection : Protective gloves.
Eye protection : Safety glasses.
Skin and body protection : Wear suitable protective clothing.
Respiratory protection : Wear respiratory protection. Where exposure through inhalation may occur from use, respiratory protection equipment is recommended.
Environmental exposure controls : Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid
Color : Mixture contains one or more component(s) which have the following color(s):
Dark grey to black
Odor :
Mixture contains one or more component(s) which have the following odor(s):
Amine-like Acrid
Odor threshold : No data available
pH : No data available
Melting point : Not applicable
Freezing point : No data available
Boiling point : No data available
Flash point : 95 °C
Relative evaporation rate (butyl acetate=1) : No data available
Flammability (solid, gas) : No data available
Explosion limits : No data available
Explosive properties : No data available
Oxidizing properties : No data available
Vapor pressure : < 1 mm Hg @ 20 deg C
Relative density : No data available
Relative vapor density at 20 °C : No data available
Solubility : Poorly soluble in water.
Water: Solubility in water of component(s) of the mixture :
•: 0.0014 g/100ml •: < 0.01 g/100ml •: 5.7 mg/l (25 °C, insoluble) •: 0.015 g/100ml •: >
16 g/100ml •: Complete •: Complete •: 8.4 g/100ml (20 °C) •: Complete •: 1.2 g/100ml
•: 660 g/100ml (30 °C) •: > 10 g/100ml (20 °C, soluble) •Triethylenetetramine: Complete
Log Pow : No data available
Auto-ignition temperature : No data available
Decomposition temperature : No data available
Viscosity : No data available
Viscosity, kinematic : No data available
Viscosity, dynamic : No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

The product is non-reactive under normal conditions of use, storage and transport.

10.2. Chemical stability

Stable under normal conditions.

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

10.5. Incompatible materials

Oxidizing agent.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed. Inhalation:vapour: Harmful if inhaled.

Encore Rail Systems, Inc. 12000HV Epoxy Hardener (None - mix)	
ATE US (oral)	1430.167 mg/kg body weight
ATE US (vapors)	11.000 mg/l/4h
2,4,6-Tri(dimethylaminomethyl) phenol (90-72-2)	
LD50 oral rat	1200 mg/kg (Rat; Equivalent or similar to OECD 401; Literature study; 2169 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rat	> 2000 mg/kg (Rat; Literature study; Other; >1 ml/kg; Rat; Experimental value)
ATE US (oral)	1200.000 mg/kg body weight
Nonyl phenol (84852-15-3)	
LD50 oral rat	1620 mg/kg (Rat; Other; Experimental value; 1412 mg/kg bodyweight; Rat; Experimental value)
LD50 dermal rat	2140 mg/kg
ATE US (oral)	1620.000 mg/kg body weight
ATE US (dermal)	2140.000 mg/kg body weight
Aliphatic Amine Blend (UNKNOWN, MIX)	
LD50 dermal rabbit	> 200 mg/kg
ATE US (dermal)	1100.000 mg/kg body weight
Benzene-1,3-dimethanamine (1477-55-0)	
LD50 oral rat	980 mg/kg
LD50 dermal rabbit	2000 mg/kg (Rabbit)
LC50 inhalation rat (mg/l)	2.4 mg/l/4h (Rat)
ATE US (oral)	980.000 mg/kg body weight
ATE US (dermal)	2000.000 mg/kg body weight
ATE US (vapors)	1.340 mg/l/4h
ATE US (dust, mist)	2.400 mg/l/4h
Phenol (108-95-2)	
LD50 oral rat	650 mg/kg (Rat; OECD 401: Acute Oral Toxicity; Experimental value)
LD50 dermal rat	660 mg/kg (Rat; Experimental value; Equivalent or similar to OECD 402)
LD50 dermal rabbit	850 - 1400 mg/kg (Rabbit)
LC50 inhalation rat (mg/l)	0.32 mg/l/4h (Rat; Literature study)
ATE US (oral)	100.000 mg/kg body weight
ATE US (dermal)	660.000 mg/kg body weight
ATE US (vapors)	0.320 mg/l/4h
ATE US (dust, mist)	0.320 mg/l/4h
Ethyl alcohol (64-17-5)	
LD50 oral rat	10740 mg/kg body weight (Rat; OECD 401: Acute Oral Toxicity; Experimental value)
LD50 dermal rabbit	> 16000 mg/kg (Rabbit; Literature study)
ATE US (oral)	10740.000 mg/kg body weight
Calcium nitrate (13477-34-4)	
LD50 oral rat	3900 mg/kg (Rat)

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Calcium nitrate (13477-34-4)	
ATE US (oral)	500.000 mg/kg body weight

Diethylenetriamine (111-40-0)	
LD50 oral rat	1553 mg/kg body weight (Rat; Other; Experimental value)
LD50 dermal rabbit	1045 mg/kg body weight (Rabbit; Experimental value; Other)
ATE US (oral)	1553.000 mg/kg body weight
ATE US (dermal)	1045.000 mg/kg body weight

Bisphenol-A (80-05-7)	
LD50 oral rat	> 2000 - 5000 mg/kg
LD50 dermal rabbit	6400 mg/kg
ATE US (oral)	2000.000 mg/kg body weight
ATE US (dermal)	6400.000 mg/kg body weight

Aminoethylpiperazine (140-31-8)	
LD50 oral rat	2140 mg/kg
LD50 dermal rabbit	880 mg/kg
ATE US (oral)	500.000 mg/kg body weight
ATE US (dermal)	880.000 mg/kg body weight

Triethylenetetramine (112-24-3)	
LD50 oral rat	1716 mg/kg
LD50 dermal rabbit	1465 mg/kg
ATE US (oral)	1716.000 mg/kg body weight
ATE US (dermal)	1465.000 mg/kg body weight

Skin corrosion/irritation	: Causes severe skin burns and eye damage.
Serious eye damage/irritation	: Not classified
Respiratory or skin sensitization	: May cause an allergic skin reaction.
Germ cell mutagenicity	: Suspected of causing genetic defects.
Carcinogenicity	: Not classified

Phenol (108-95-2)	
IARC group	3 - Not classifiable

Nonyl phenol (84852-15-3)	
NOAEL (oral,rat)	650 mg/kg body weight

Reproductive toxicity	: Suspected of damaging fertility or the unborn child .
Specific target organ toxicity (single exposure)	: Not classified

Specific target organ toxicity (repeated exposure)	: May cause damage to organs through prolonged or repeated exposure.
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Aspiration hazard	: Not classified
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Symptoms/injuries after inhalation	: Irritation of the eye tissue. Irritation of the nasal mucous membranes. Irritation of the respiratory tract. Dry/sore throat. EXPOSURE TO HIGH CONCENTRATIONS: Respiratory difficulties. Possible inflammation of the respiratory tract.
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Symptoms/injuries after skin contact	: May cause an allergic skin reaction. Skin rash/inflammation. Allergic skin rash. Blisters. Burns. Slow-healing wounds. Repeated exposure to this material can result in absorption through skin causing significant health hazard.
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Symptoms/injuries after eye contact	: Causes serious eye damage. Corrosion of the eye tissue. Inflammation/damage of the eye tissue. Lacrimation. Product vapor can cause lacrimation, conjunctivitis, and corneal edema when absorbed into the tissue of the eye. Corneal edema may give rise to a perception of "blue haze" or "fog" around lights. The effect is transient and has no known residual effects. Visual disturbances. Mechanical irritation.
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Symptoms/injuries after ingestion	: Abdominal pain. Burns to the gastric/intestinal mucosa. No effects known. Cramps/uncontrolled muscular contractions. Nausea.
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Encore Rail Systems, Inc. 1200HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Symptoms/injuries upon intravenous administration : No supplementary information available.
Chronic symptoms : Chronic exposure can cause liver and kidney damage.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Very toxic to aquatic life. Harmful to aquatic life with long lasting effects.

2,4,6-Tri(dimethylaminomethyl) phenol (90-72-2)	
LC50 fish 1	175 mg/l Carp
LC50 fish 2	222 mg/l (24h) Rainbow trout
ErC50 (algae)	84 mg/l Scenedesmus subspicatus
NOEC chronic algae	6.25 mg/l (72h) Scenedesmus subspicatus
Threshold limit algae 2	84 mg/l (EC50; OECD 201: Alga, Growth Inhibition Test; 72 h; Scenedesmus subspicatus; Static system; Fresh water; Experimental value)
Nonyl phenol (84852-15-3)	
LC50 fish 1	0.135 mg/l Fathead minnow
EC50 other aquatic organisms 1	0.135 mg/l Lepomis macrochirus, 96 hr
LC50 fish 2	0.164 mg/l Fathead minnow 48 Hr
EC50 Daphnia 2	0.085 mg/l (EC50; ASTM E729-88; 48 h; Daphnia magna; Semi-static system; Fresh water; Experimental value)
NOEC chronic fish	0.083 mg/l Fathead minnow 96 hr
NOEC chronic crustacea	0.211 mg/l Lepomis macrochirus
Threshold limit algae 2	0.027 mg/l (EC50; EPA OTS 797.1050; 96 h; Skeletonema costatum; Static system; Salt water; Experimental value)
Benzene-1,3-dimethanamine (1477-55-0)	
LC50 fish 1	87.6 mg/l
EC50 Daphnia 1	15.2 mg/l OECD 202
EC50 other aquatic organisms 1	32.1 mg/l Pseudokirchneriella subcapitata (algae) - 72 h OECD 201
Threshold limit algae 1	12 mg/l (EC50; 72 h)
Phenol (108-95-2)	
LC50 fish 1	< 68.8 mg/l Carassius auratus (goldfish)
LC50 other aquatic organisms 1	0.04 mg/l (4 days; Rana sp.; LC50)
EC50 Daphnia 1	56 mg/l
ErC50 (algae)	370 mg/l Chlorella vulgaris (Fresh water algae) 96 HR
Ethyl alcohol (64-17-5)	
LC50 fish 1	14200 mg/l (LC50; US EPA; 96 h; Pimephales promelas; Flow-through system; Fresh water; Experimental value)
Calcium nitrate (13477-34-4)	
LC50 fish 2	10000 mg/l (LC50; 96 h)
Diethylenetriamine (111-40-0)	
LC50 fish 1	430 mg/l (LC50; EU Method C.1; 96 h; Poecilia reticulata; Semi-static system; Fresh water; Experimental value)
EC50 Daphnia 1	64.6 mg/l (EC50; EU Method C.2; 48 h; Daphnia magna; Static system; Fresh water; Experimental value)
Threshold limit algae 1	1164 mg/l (ErC50; OECD 201: Alga, Growth Inhibition Test; 72 h; Selenastrum capricornutum; Static system; Fresh water; Experimental value)
Threshold limit algae 2	10 mg/l (NOEC; OECD 201: Alga, Growth Inhibition Test; 72 h; Selenastrum capricornutum; Static system; Fresh water; Experimental value)
Bisphenol-A (80-05-7)	
LC50 fish 1	4.6 mg/l
EC50 Daphnia 1	10.2 mg/l
Aminoethylpiperazine (140-31-8)	
LC50 fish 1	2190 mg/l (96 h; Pimephales Promelas)
EC50 Daphnia 1	32 mg/l (EC50; OECD 202: Daphnia sp. Acute Immobilisation Test; 48 h; Daphnia magna; Static system)
LC50 fish 2	1000 mg/l (96 h; Poecilia reticulata)

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Aminoethylpiperazine (140-31-8)	
ErC50 (algae)	495 mg/l
Threshold limit algae 2	> 1000 mg/l (EC50; OECD 201: Alga, Growth Inhibition Test; 72 h; Selenastrum capricornutum; Fresh water)

Triethylenetetramine (112-24-3)	
Threshold limit algae 1	>= 100 mg/l (ErC50; DIN 38412-9; 72 h; Scenedesmus subspicatus)

12.2. Persistence and degradability

2,4,6-Tri(dimethylaminomethyl) phenol (90-72-2)	
Persistence and degradability	Not readily biodegradable in water. Highly mobile in soil. Low potential for adsorption in soil.

Nonyl phenol (84852-15-3)	
Persistence and degradability	Inherently biodegradable. Biodegradability in soil: no data available. Adsorbs into the soil. Photodegradation in the air.

Benzene-1,3-dimethanamine (1477-55-0)	
Persistence and degradability	Not readily biodegradable in water.

Phenol (108-95-2)	
Persistence and degradability	Readily biodegradable in water. Photolysis in water. Readily biodegradable in the soil. Inhibits biodegradation processes in the soil. Low potential for adsorption in soil. Photooxidation in the air.
Biochemical oxygen demand (BOD)	1.68 g O ₂ /g substance
Chemical oxygen demand (COD)	2.28 g O ₂ /g substance
ThOD	2.38 g O ₂ /g substance
BOD (% of ThOD)	0.71

Ethyl alcohol (64-17-5)	
Persistence and degradability	Readily biodegradable in water. Biodegradable in the soil. Highly mobile in soil.
Biochemical oxygen demand (BOD)	0.8 - 0.967 g O ₂ /g substance
Chemical oxygen demand (COD)	1.70 g O ₂ /g substance
ThOD	2.10 g O ₂ /g substance
BOD (% of ThOD)	0.43

Calcium nitrate (13477-34-4)	
Persistence and degradability	Biodegradable in the soil.
Biochemical oxygen demand (BOD)	Not applicable
Chemical oxygen demand (COD)	Not applicable
ThOD	Not applicable

Diethylenetriamine (111-40-0)	
Persistence and degradability	Readily biodegradable in water. Readily biodegradable in the soil. Adsorbs into the soil. Low potential for mobility in soil. Photooxidation in the air.

Aminoethylpiperazine (140-31-8)	
Persistence and degradability	Not readily biodegradable in water. Low potential for mobility in soil.
Chemical oxygen demand (COD)	0.56 g O ₂ /g substance

Triethylenetetramine (112-24-3)	
Persistence and degradability	Not readily biodegradable in water. No (test)data on mobility of the substance available. Photodegradation in the air.

12.3. Bioaccumulative potential

2,4,6-Tri(dimethylaminomethyl) phenol (90-72-2)	
Log Pow	0.77 (Literature; 0.219; Experimental value; Equivalent or similar to OECD 107; 21.5 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

Nonyl phenol (84852-15-3)	
BCF fish 1	271 (BCF; 480 h; Pimephales promelas)

Encore Rail Systems, Inc. 1200HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Nonyl phenol (84852-15-3)	
BCF fish 2	1200/1300,BCF; OECD 305: Bioconcentration: Flow-Through Fish Test; 32 days; Gasterosteus aculeatus; Flow-through system; Salt water; Experimental value; Fresh weight
Log Pow	3.28 (OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method; 5.4; Experimental value; OECD 117: Partition Coefficient (n-octanol/water), HPLC method; 23 °C)
Bioaccumulative potential	Potential for bioaccumulation (500 ≤ BCF ≤ 5000).

Benzene-1,3-dimethanamine (1477-55-0)	
BCF fish 1	< 2.7 (BCF)
Log Pow	0.15
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

Phenol (108-95-2)	
BCF fish 1	17.5 Danio rerio (zebra fish)
Log Pow	1.47 (Experimental value; Equivalent or similar to OECD 117; 30 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

Ethyl alcohol (64-17-5)	
BCF fish 1	1 (BCF; Other; 72 h; Cyprinus carpio; Static system; Fresh water; Read-across)
Log Pow	-0.31 (Experimental value)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

Calcium nitrate (13477-34-4)	
Bioaccumulative potential	Not bioaccumulative.

Diethylenetriamine (111-40-0)	
BCF fish 1	0.3 - 6.3 (BCF; OECD 305: Bioconcentration: Flow-Through Fish Test; 8 weeks; Cyprinus carpio; Flow-through system; Fresh water; Experimental value; Fresh weight)
Log Pow	-1.58 (Calculated; 20 °C; -5.58; Calculated; 20 °C)
Bioaccumulative potential	Low potential for bioaccumulation (BCF < 500).

Aminoethylpiperazine (140-31-8)	
BCF fish 1	<= >0.3<=6.3,BCF; OECD 305: Bioconcentration: Flow-Through Fish Test; >4<=6 weeks; Cyprinus carpio; Flow-through system; Fresh water; Read-across
Log Pow	-1.48 (Experimental value; OECD 107: Partition Coefficient (n-octanol/water): Shake Flask Method; 20 °C)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

Triethylenetetramine (112-24-3)	
Bioaccumulative potential	Bioaccumulation: not applicable.

12.4. Mobility in soil

Nonyl phenol (84852-15-3)	
Log Koc	log Koc,Other; >= 4.35 - <= 5.69; Experimental value; GLP

Phenol (108-95-2)	
Surface tension	0.0713 N/m (20 °C)

Ethyl alcohol (64-17-5)	
Surface tension	0.022 N/m (20 °C)

Diethylenetriamine (111-40-0)	
Ecology - soil	Soil contaminant.

Aminoethylpiperazine (140-31-8)	
Log Koc	log Koc,4.57; Read-across; GLP

12.5. Other adverse effects

Effect on global warming : No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

- Waste disposal recommendations : For small amounts, mix resin and hardener according to product directions and allow to harden. When cured, product is non-hazardous, and may be placed in industrial or municipal landfill if local regulations permit. Collect all waste in suitable and labeled containers and dispose according to local legislation. Disposal through controlled incineration or authorized waste dump.
- Additional information : Industrial waste.
- List of hazardous wastes : Material in "as sold" condition is not regulated as a hazardous waste under federal RCRA regulations.

SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN2735 Polyamines, liquid, corrosive, n.o.s. (Amine blend, Nonyl phenol), 8, II

UN-No.(DOT) : UN2735

Proper Shipping Name (DOT) : Polyamines, liquid, corrosive, n.o.s.
Amine blend, Nonyl phenol

Transport hazard class(es) (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136

Hazard labels (DOT) : 8 - Corrosive



Packing group (DOT) : II - Medium Danger

Dangerous for the environment : Yes

Marine pollutant : Yes



DOT Packaging Non Bulk (49 CFR 173.xxx) : 202

DOT Packaging Bulk (49 CFR 173.xxx) : 242

DOT Symbols : G - Identifies PSN requiring a technical name

DOT Special Provisions (49 CFR 172.102) : B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized.

IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.

T11 - 6 178.274(d)(2) Normal..... 178.275(d)(3)

TP1 - The maximum degree of filling must not exceed the degree of filling determined by the following: Degree of filling = $97 / 1 + a (tr - tf)$ Where: tr is the maximum mean bulk temperature during transport, and tf is the temperature in degrees celsius of the liquid during filling.

TP27 - A portable tank having a minimum test pressure of 4 bar (400 kPa) may be used provided the calculated test pressure is 4 bar or less based on the MAWP of the hazardous material, as defined in 178.275 of this subchapter, where the test pressure is 1.5 times the MAWP.

DOT Packaging Exceptions (49 CFR 173.xxx) : 154

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : 1 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L

DOT Vessel Stowage Location : A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

DOT Vessel Stowage Other : 52 - Stow "separated from" acids

Other information : No supplementary information available.

TDG

No additional information available

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Transport by sea

UN-No. (IMDG)	: 2735
Proper Shipping Name (IMDG)	: POLYAMINES, LIQUID, CORROSIVE, N.O.S.
Class (IMDG)	: 8 - Corrosive substances
Packing group (IMDG)	: II - substances presenting medium danger

Air transport

UN-No. (IATA)	: 2735
Proper Shipping Name (IATA)	: Polyamines, liquid, corrosive, n.o.s.
Class (IATA)	: 8 - Corrosives
Packing group (IATA)	: II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Encore Rail Systems, Inc. 12000HV Epoxy Hardener (None - mix)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
2,4,6-Tri(dimethylaminomethyl) phenol (90-72-2)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Nonyl phenol (84852-15-3)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
SARA Section 313 - Emission Reporting	1 %
Aliphatic Amine Blend (UNKNOWN, MIX)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Benzene-1,3-dimethanamine (1477-55-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Phenol (108-95-2)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
RQ (Reportable quantity, section 304 of EPA's List of Lists)	1000 lb
SARA Section 302 Threshold Planning Quantity (TPQ)	10000 lb 500lb if the substance is solid in powder form with particle size less than 100 microns, or is in solution or molten form
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard Delayed (chronic) health hazard
SARA Section 313 - Emission Reporting	100 %
Ethyl alcohol (64-17-5)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Calcium nitrate (13477-34-4)	
SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
Diethylenetriamine (111-40-0)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	
Bisphenol-A (80-05-7)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory Subject to reporting requirements of United States SARA Section 313	
Aminoethylpiperazine (140-31-8)	
Listed on the United States TSCA (Toxic Substances Control Act) inventory	

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Triethylenetetramine (112-24-3)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

SARA Section 311/312 Hazard Classes

Delayed (chronic) health hazard
Immediate (acute) health hazard

15.2. International regulations

CANADA

No additional information available

EU-Regulations

No additional information available

National regulations

Encore Rail Systems, Inc. 12000HV Epoxy Hardener (None - mix)

All chemical substances in this product are listed in the EPA (Environment Protection Agency) TSCA (Toxic Substances Control Act) Inventory

2,4,6-Tri(dimethylaminomethyl) phenol (90-72-2)

All chemical substances in this product are listed in the EPA (Environment Protection Agency) TSCA (Toxic Substances Control Act) Inventory

Aliphatic Amine Blend (UNKNOWN, MIX)

All chemical substances in this product are listed in the EPA (Environment Protection Agency) TSCA (Toxic Substances Control Act) Inventory

Ethyl alcohol (64-17-5)

Listed on IARC (International Agency for Research on Cancer) (ingestion)

Calcium nitrate (13477-34-4)

All chemical substances in this product are listed in the EPA (Environment Protection Agency) TSCA (Toxic Substances Control Act) Inventory

15.3. US State regulations

California Proposition 65 - This product contains, or may contain, trace quantities of a substance(s) known to the state of California to cause cancer, developmental and/or reproductive harm

Bisphenol-A (80-05-7)

U.S. - California - Proposition 65 - Carcinogens List	U.S. - California - Proposition 65 - Developmental Toxicity	U.S. - California - Proposition 65 - Reproductive Toxicity - Female	U.S. - California - Proposition 65 - Reproductive Toxicity - Male	Non-significant risk level (NSRL)
No	No	Yes	Yes	

Benzene-1,3-dimethanamine (1477-55-0)

U.S. - New Jersey - Right to Know Hazardous Substance List

Phenol (108-95-2)

U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

Ethyl alcohol (64-17-5)

U.S. - New Jersey - Right to Know Hazardous Substance List

Diethylenetriamine (111-40-0)

U.S. - New Jersey - Right to Know Hazardous Substance List

Bisphenol-A (80-05-7)

U.S. - New Jersey - Right to Know Hazardous Substance List

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Triethylenetetramine (112-24-3)

U.S. - New Jersey - Right to Know Hazardous Substance List

SECTION 16: Other information

Abbreviations and acronyms

: N.A. - Not Applicable
N.E. - Not Established
N.D. - Not Determined
ACGIH = American Conference of Governmental Industrial Hygienists
OSHA = US Occupational Health and Safety Administration
TLV-TWA = Threshold Limit Value-Time Weighted Average (8 hrs)
STEL = Short-Term Exposure Limit (15 min)
C = Ceiling Value
PEL = Permissible Exposure Limit
OEL = Occupational Exposure Limit
IDLH = Immediately Dangerous to Life and Health
ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
PNEC = Predicted No Effect Concentration
LOAEL = Lowest Observed Adverse Effect Level
NOAEL = No Observed Adverse Effect Level
NOAEC = No Observed Adverse Effect Concentration.

Other information

: **DISCLAIMER:** To the best of our knowledge, the information contained in this MSDS is accurate or is obtained from sources believed to be accurate. However, no liability, expressed or implied, is assumed for the accuracy or completeness of the information contained herein. Buyer assumes liability in its use of the material.

Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Full text of H-phrases:

Acute Tox. 1 (Inhalation:vapour)	Acute toxicity (inhalation:vapour) Category 1
Acute Tox. 2 (Inhalation:vapour)	Acute toxicity (inhalation:vapor) Category 2
Acute Tox. 3 (Dermal)	Acute toxicity (dermal) Category 3
Acute Tox. 3 (Oral)	Acute toxicity (oral) Category 3
Acute Tox. 4 (Dermal)	Acute toxicity (dermal) Category 4
Acute Tox. 4 (Inhalation:vapour)	Acute toxicity (inhalation:vapor) Category 4
Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Acute 2	Hazardous to the aquatic environment - Acute Hazard Category 2
Aquatic Acute 3	Hazardous to the aquatic environment - Acute Hazard Category 3
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment - Chronic Hazard Category 3
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Eye Irrit. 2B	Serious eye damage/eye irritation Category 2B
Flam. Liq. 2	Flammable liquids Category 2
Muta. 2	Germ cell mutagenicity Category 2
Ox. Sol. 3	Oxidizing solids Category 3
Repr. 2	Reproductive toxicity Category 2
Skin Corr. 1A	Skin corrosion/irritation Category 1A
Skin Corr. 1B	Skin corrosion/irritation Category 1B
Skin Corr. 1C	Skin corrosion/irritation Category 1C
Skin Irrit. 2	Skin corrosion/irritation Category 2
Skin Sens. 1	Skin sensitization Category 1
STOT RE 2	Specific target organ toxicity (repeated exposure) Category 2
STOT SE 3	Specific target organ toxicity (single exposure) Category 3
H225	Highly flammable liquid and vapor
H272	May intensify fire; oxidizer
H301	Toxic if swallowed
H302	Harmful if swallowed
H311	Toxic in contact with skin
H312	Harmful in contact with skin
H314	Causes severe skin burns and eye damage
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H320	Causes eye irritation
H330	Fatal if inhaled
H332	Harmful if inhaled
H335	May cause respiratory irritation
H341	Suspected of causing genetic defects
H361	Suspected of damaging fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H401	Toxic to aquatic life
H402	Harmful to aquatic life
H410	Very toxic to aquatic life with long lasting effects
H412	Harmful to aquatic life with long lasting effects

NFPA health hazard

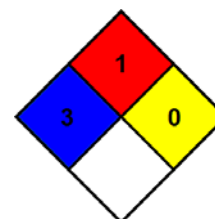
: 3 - Short exposure could cause serious temporary or residual injury even though prompt medical attention was given.

NFPA fire hazard

: 1 - Must be preheated before ignition can occur.

NFPA reactivity

: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.



Encore Rail Systems, Inc. 12000HV Epoxy Hardener

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

HMIS III Rating

Health	: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given
Flammability	: 1 Slight Hazard - Materials that must be preheated before ignition will occur. Includes liquids, solids and semi solids having a flash point above 200 F. (Class IIIB)
Physical	: 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
Personal Protection	: C C - Safety glasses, Gloves, Synthetic apron

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product