

SAFETY DATA SHEET (SDS)

SECTION 1 – IDENTIFICATION

INITIAL SUPPLIER IDENTIFIER

Technical Construction Infrastructure Inc.
4181 Sladeview Cres. Unit #32 Mississauga,
ON,
Canada, L5L 5R2
Telephone: (905) 997-5800

EMERGENCY TELEPHONE NUMBER

24hr Emergency Transportation Telephone Number
CANUTEC (613) 996-6666 (COLLECT)

PRODUCT IDENTIFIER

Product No: TCI 855R Hardener

OTHER MEANS OF IDENTIFICATION

N/A

RECOMMENDED USE AND RESTRICTIONS ON USE

N/A

SECTION 2 – HAZARD IDENTIFICATION

CLASSIFICATION

ACUTE TOXICITY ORAL (Category 4)
ACUTE TOXICITY DERMAL (Category 4)
SKIN IRRITANT (Category 1B)
SKIN SENSITIZER (Category 1)
EYE IRRITANT (Category 1)
REPRODUCTIVE TOXICITY (Category 1B)
SIGNAL WORD: DANGER



HAZARD STATEMENTS	H302+H312 Harmful if swallowed or in contact with skin H314 Causes severe skin burns and eye damage H317 May cause an allergic skin reaction H360 May damage fertility or the unborn child H362 May cause harm to breast-fed children H318 Causes serious eye damage
PRECAUTIONARY STATEMENTS	P260 Do not breathe dust/fumes/gas/mist/vapours/spray P263 Avoid contact during pregnancy and while nursing P264 Wash hands thoroughly after handling P280 Wear protective gloves/protective clothing/ eye protection/ face protection P272 Contaminated work clothing should not be allowed out of the workplace P273 Avoid release to the environment
RESPONSE IF SWALLOWED IF ON SKIN	P301+P330+P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting P312 Call a POISON CENTER or Doctor/Physician if you feel unwell P302+P352 IF ON SKIN: Wash with plenty of water P361+P364 Take off immediately all contaminated clothing and wash it before reuse P353 Rinse skin with water/shower P312 Call a POISON CENTER or Doctor/Physician if you feel unwell
IF INHALED	P333+P313 If skin irritation or rash occurs: get medical advice/attention as appropriate P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing
IF IN EYES	P310 Immediately call a POISON CENTER or Doctor/Physician P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes; Remove contact lenses, if present and easy to do. Continue rinsing P310 Immediately call a POISON CENTER or Doctor/Physician

STORAGE & DISPOSAL	P405 P501	Store locked up Dispose of contents/container in accordance to Federal rules, laws and regulations.
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SECTION 3 – COMPOSITION INFORMATION

INGREDIENT	#CAS	%
Trimethylolpropane poly(oxypropylene)triamine	39423-51-3	80-100
Tetraethylenepentamine	112-57-2	10-30

SECTION 4 – FIRST AID MEASURES

Eye contact	Flush eyes with plenty of water for at least 15 minutes while holding eyelids apart. Consult a physician. Do not use eye ointment.
Skin contact	Wash off in flowing water or shower with soap and rinse thoroughly. Remove contaminated clothing and discard. If irritation persists, consult a physician.
Inhalation	Remove to fresh air. If breathing is laboured, administer oxygen. If not breathing, administer artificial respiration. Consult a physician.
Ingestion	If swallowed, seek medical attention immediately. Do not induce vomiting unless directed to do so by medical personnel. Do not give anything by mouth to an unconscious person

SECTION 5 – FIRE-FIGHTING MEASURES

Explosion data - sensitivity to

1) Mechanical impact	Stable
2) Static discharge	Stable

Unusual Fire and Explosion Hazards During a fire, oxides of nitrogen may be evolved. Burning can produce carbon monoxide and/or carbon dioxide.

Means of extinguishing Water spray, carbon dioxide, dry chemical, foam to extinguish flames. Use water spray to cool fire-exposed containers. Water or foam may cause frothing.

Flash point 148°C [PMCC]

Conditions of flammability Non-flammable

Upper flammable limit Not available

Lower flammable limit Not available

Auto ignition temperature Not available

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures Wear appropriate protective equipment. Avoid contact with liquid and vapours.

Environmental Precautionary Measures Prevent entry into sewers and streams, dike if needed. Consult local authorities.

Leak and spill procedures Avoid contact with material. Evacuate all non-essential personnel. Keep spark producing equipment away. Dike area to prevent spill spreading and soak up with absorbent material such as sand, or polypropylene or polyethylene fiber products and collect in suitable containers. Residual resin may be removed using steam or hot soapy water. Dispose of absorbent material in accordance with regulations.

SECTION 7 – HANDLING AND STORAGE

Handling	Maintain Emergency eye wash stations and showers near working area. Practice good caution and personal cleanliness to avoid skin, eye contact and direct inhalation.
Storage	Keep containers tightly sealed when not in use. Store away from heat, ignition sources; and store away from incompatible materials. Store in a cool, dry and well-ventilated area.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye protection	Splash proof goggles with side shields.
Skin protection	Protective clothing such as coveralls or lab coats must be worn. Gloves resistant to chemicals and petroleum distillates required. When handling large quantities, impervious suits, gloves, and rubber boots must be worn. Launder or dry-clean clothes when soiled.
Respiratory protection	Airborne concentrations should be kept to lowest levels possible. If vapour, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH/MSHA approved respirators.
Engineering controls	Good general ventilation is sufficient for most conditions. Avoid breathing mists if general ventilation or local exhausts is inadequate; persons exposed to mists should wear appropriate NIOSH/MSHA approved breathing devices.
Exposure limits	Not available

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Liquid
Odour and appearance	Ammonia-like odour
Odour threshold (p.p.m.)	Not available
Specific gravity (gm/cm³)	1.0
Vapour pressure	< 0.01 kPa at 20°C
Vapour density (Air = 1)	> 1
Evaporation rate (n butyl acetate = 1)	Not available
Boiling point (°C)	220.6°C
Freezing point (°C)	Not available
pH	11.7
Coefficient of water/oil distribution	Not available
Solubility in water (%)	> 10

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability. Stable [x] Unstable []

If no, under which conditions Avoid excessive heat, strong oxidizers, acids and bases.

Incompatibility to other substances.

Yes[x] No[] If so, which ones Bases, acids, amines and oxidizing materials, plastics other than Teflon or polypropylene, and aluminum at high temperatures. Sodium or Calcium Hypochlorite. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion.

Materials to avoid

CAUTION! N-Nitrosamines, many of which are known to be potent carcinogens, may be formed when the product comes in contact with nitrous acid, nitrites or atmospheres with high nitrous oxide concentrations.

Conditions of Reactivity

Avoid heating up the product. Hazardous polymerization will not occur by itself, but masses of more than 1 lb of epoxy resin combined with this product will cause irreversible polymerization with considerable heat buildup.

Explosion data - sensitivity to

- | | |
|-----------------------------|--------|
| 1) Mechanical impact | Stable |
| 2) Static discharge | Stable |

Unusual Explosion Hazards

Extinguish all nearby sources of ignition since vapours decompose to toxic products at high temperatures. When exposed to heat, closed containers may explode. Contact with strong oxidizers may cause fire or explosion.

SECTION 11 – TOXICOLOGICAL INFORMATION**Route of entry****Eye contact**

Causes irritation, experienced as pain, with excess blinking and tear production, and seen as extreme redness and swelling of the eye and chemical burns of the eye. Severe eye damage may cause blindness.

Skin contact

Causes severe irritation with pain, severe excess redness and swelling with chemical burns, blister formation, and possible tissue destruction.

Inhalation

Vapour is irritating and may cause excessive tear formation, burning sensation of the nose and throat, coughing, wheezing, shortness of breath, nausea, and vomiting. Extremely high vapor concentrations may cause lung damage. Some individuals may develop asthma.

Ingestion

Causes burning of mouth, throat, and stomach with abdominal and chest pain, nausea, vomiting, diarrhea, thirst, weakness, and collapse. Aspiration may occur during swallowing or vomiting, resulting in lung damage.

Skin absorption

Prolonged or widespread contact may result in the absorption of potentially harmful amounts of material.

Effects of acute exposure to product

Skin contact may cause sensitization and an allergic skin reaction and may aggravate an existing dermatitis. Cross-sensitization may occur by skin contact with this material and other amines.

Effects of chronic exposure to product

Repeated skin contact may cause a persistent irritation or dermatitis. Repeated inhalation may cause lung damage. Overexposure to vapour, dust or mist may aggravate existing respiratory conditions, such as asthma, bronchitis, and inflammatory or fibrotic respiratory disease. Repeated oral exposures may cause kidney and liver changes.

Mutagenicity

In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

Toxicity Data

Trimethylolpropane poly(oxypropylene)triamine- Oral LD50(rat): 550 mg/kg* Dermal LD50(rat): >1,000 mg/kg

Tetraethylenepentamine- Oral LD50(rat): 2,140 kg/kg* Dermal LD50(rat): >660 mg/kg

Teratogenicity

Laboratory animals that were fed exaggerated doses of

Carcinogenicity

Not available

Reproductive toxicity

Not available

Toxicologically synergistic products

Not available

SECTION 12 – ECOLOGICAL INFORMATION

Material not readily biodegradable

SECTION 13 – DISPOSAL CONSIDERATIONS**Waste disposal**

Any disposal practice must be in accordance with Municipal, Provincial and Federal regulations. Chemical additions, processing, storage, or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate, or otherwise inappropriate. Do not allow

into any sewers, on the ground or into any body of water. Dispose of any unused, uncontaminated, as well as contaminated product, by a properly licensed company.

SECTION 14 – TRANSPORTATION INFORMATION

TDG (Canada)	
TDG Proper Shipping Name	Corrosive Liquid, N.O.S. (Amine)
Hazard Class	8
UN Number	1760
Packing Group	III
Note	No additional remark
Marine Pollutant	No

SECTION 15 – REGULATORY INFORMATION

TSCA	All ingredients are on the TSCA Chemical Substance Inventory, or are not required to be listed on the TSCA inventory.
DSL	The substance(s) in this product is/are on the Canadian Domestic Substances List.
WHMIS	D1B, D2B, E
NFPA	Health: 3, Flammability: 1, Reactivity: 0
SARA	311 Immediate (acute) health hazard * Delayed (chronic) health hazard 312 Immediate (acute) health hazard * Delayed (chronic) health hazard 313 Not Listed

SECTION 16 – OTHER INFORMATION

Disclaimer: Technical Construction Infrastructure Inc. (TCI) expressly disclaims all express or implied warranties of merchantability and fitness for a particular purpose, with respect to the product or information provided herein, and shall under no circumstances be liable for incidental or consequential damages.

Do not use ingredient information and/or ingredient percentages in this MSDS as a product specification. For product specification information refer to our Technical Data Sheet and/or Certificate of Analysis (Compliance).

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, TCI makes no representations as to its accuracy or sufficiency. Conditions of use are beyond TCI's control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling and disposal of the product, or from the publication or use of, or reliance upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

END OF SDS

SAFETY DATA SHEET (SDS)

SECTION 1 – IDENTIFICATION

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ON,
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Telephone: (905) 997-5800

EMERGENCY TELEPHONE NUMBER

24hr Emergency Transportation Telephone Number
CANUTEC (613) 996-6666 (COLLECT)

PRODUCT IDENTIFIER

Product No: TCI 855-R Resin

OTHER MEANS OF IDENTIFICATION

N/A

RECOMMENDED USE AND RESTRICTIONS ON USE

N/A

SECTION 2 – HAZARD IDENTIFICATION

CLASSIFICATION

SKIN IRRITANT (Category 2)
SKIN SENSITIZER (Category 1)
EYE IRRITANT (Category 2A)
AQUATIC CHRONIC (Category 2)
SIGNAL WORD: WARNING



HAZARD STATEMENTS	H302 Harmful if swallowed. H315 May be harmful in contact with skin. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H401 Toxic to aquatic life. H411 Toxic to aquatic life with long lasting effects.
PRECAUTIONARY STATEMENTS	P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P264 Wash thoroughly after handling. P270 Do not eat, drink, or smoke when using this product. P280 Wear protective gloves/protective clothing/ eye protection/ face protection. P272 Contaminated work clothing should not be allowed out of the workplace. P273 Avoid release to the environment.
RESPONSE IF ON SKIN	P302+P352 IF ON SKIN: Wash with plenty of water. P362+P364 Take off contaminated clothing and wash it before reuse. P333+P313 If skin irritation or rash occurs: get medical advice/attention. P305+P351+P338
IF IN EYES	P337+P313 IF IN EYES: Rinse cautiously with water for several minutes; Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
DISPOSAL	P501 Dispose of contents/container in accordance to Federal rules, laws and regulations.

SECTION 3 – COMPOSITION INFORMATION

INGREDIENT	#CAS	%
Diglycidyl-Ether of Bisphenol-A	25068-38-6	30-60
Reaction product: Bisphenol F-(epichlorohydrin); epoxy resin	9003-36-5	10-30

SECTION 4 – FIRST AID MEASURES

Eye contact	Flush eyes with plenty of water for at least 15 minutes while holding eyelids apart. Consult a physician. Do not use eye ointment.
Skin contact	Wash off in flowing water or shower with soap and rinse thoroughly. Remove contaminated clothing and discard. If irritation persists, consult a physician.
Inhalation	Remove to fresh air. If breathing is laboured, administer oxygen. If not breathing administer artificial respiration. Consult a physician.
Ingestion	If swallowed, seek medical attention immediately. Do not induce vomiting unless directed to do so by medical personnel. Do not give anything by mouth to an unconscious person

SECTION 5 – FIRE-FIGHTING MEASURES

Hazardous combustion products	The by-products expected in incomplete pyrolysis or combustion of epoxy resins are mainly phenolics, carbon monoxide and water. The thermal decomposition products of epoxy resins therefore should be treated as potentially hazardous substances, and appropriate precautions should be taken. May liberate carbon monoxide or carbon dioxide.
Means of extinguishing	Foam, CO ₂ , dry chemical, water spray. DO NOT use a direct water stream.
Flash point	>150°C (closed cup)
Conditions of flammability	Combustible
Upper flammable limit	Not available
Lower flammable limit	Not available
Auto ignition temperature	Not available

SECTION 6 – ACCIDENTAL RELEASE MEASURES

Personal Precautionary Measures	Wear appropriate protective equipment and clothing.
Environmental Precautionary Measures	Prevent entry into sewers and streams, dike if needed. Consult local authorities.
Leak and spill procedures	Avoid contact with material. Evacuate all non-essential personnel. Keep spark producing equipment away. Dike area to prevent spill spreading and soak up with absorbent material such as sand, or polypropylene or polyethylene fibre products and collect in suitable containers. Residual resin may be removed using steam or hot soapy water. Solvents are not recommended for cleanup unless the recommended exposure guidelines and safe handling practices for the specific solvent are followed. Consult appropriate solvent MSDS for handling information and exposure guidelines.

SECTION 7 – HANDLING AND STORAGE

Handling	Maintain Emergency eye wash stations and showers near working area. Practice good caution and personal cleanliness to avoid skin, eye contact and direct inhalation. Recommended pumping and storage temperature is 15-25°C.
Storage	Keep containers tightly sealed when not in use. Store away from heat, ignition sources; and store away from incompatible materials. Store the material in a cool, dry, and well-ventilated area.

SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye protection	Safety glasses with side shields. Splash proof goggles.
Skin protection	Use protective clothing impervious to this product. Selection of specific items such as face shield, gloves, boots, apron or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin with soap and water; and launder clothing before reuse.
Respiratory Protection	No respiratory protection should be needed at room temperature. Avoid breathing vapours of heated material. NOTE: If grinding or sanding cured material, use NIOSH or OSHA approved respiratory protection.
Engineering controls	Good general ventilation is sufficient for most conditions. NOTE: If grinding or sanding cured product use NIOSH/MSHA approved respiratory protection at all times.
Exposure limits	Not available

SECTION 9 – PHYSICAL AND CHEMICAL PROPERTIES

Physical state	Liquid
Odour and appearance	Faint epoxy odour
Odour threshold (p.p.m.)	Not available
Specific gravity (gm/cm³)	1.7
Vapour pressure (Pa)	13.3
Vapour density (Air = 1)	Not available
Evaporation rate (n butyl acetate = 1)	Not available
Boiling point (°C)	> 200°C

SECTION 10 – STABILITY AND REACTIVITY

Chemical Stability Stable [x] Unstable []

If no, under which conditions Avoid excessive heat, strong oxidizers, acids and bases.

Incompatibility to other substances

Yes[x] No[] If so, which ones Bases, acids, amines and oxidizing materials, plastics other than Teflon or polypropylene, and aluminum at high temperatures. Sodium or Calcium Hypochlorite. Reaction with peroxides may result in violent decomposition of peroxide possibly creating an explosion.

Conditions of Reactivity

Excess heating above 60°C over long periods of time degrades the resin. Hazardous polymerization will not occur by itself, but masses of more than 1 lb of product plus an aliphatic amine will cause irreversible polymerization with considerable heat buildup.

Explosion data - sensitivity to

- | | |
|-----------------------------|--------|
| 1) Mechanical impact | Stable |
| 2) Static discharge | Stable |

Unusual Explosion Hazards

Extinguish all nearby sources of ignition since vapours decompose to toxic products at high temperatures. When exposed to heat, closed containers may explode. Contact with strong oxidizers may cause fire or explosion.

SECTION 11 – TOXICOLOGICAL INFORMATION

Route of entry

Eye contact May cause slight transient (temporary) eye irritation. Corneal injury is unlikely.

Skin contact	Prolonged or repeated contact may cause skin irritation with local redness.
Inhalation	Not available
Aspiration Toxicity	Not likely to present a hazard.
Ingestion	Not available
Acute Toxicity Estimates (ATE)	Very low toxicity if swallowed. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Vapour from heated material, mist or aerosol may cause respiratory irritation.
Effects of acute exposure to product	Not available
Effects of chronic exposure to product	Skin sensitization
Carcinogenicity	Not listed as a carcinogen by NTP, IARC, OSHA and ACGIH
Germ Cell Mutagenicity	Animal mutagenicity studies were negative. In vitro mutagenicity studies were negative in some cases, and positive in others
Reproductive Toxicity	No reproductive effects
Toxicity Data	<i>Diglycidyl-Ether of Bisphenol-A</i> Oral LD50 (rats): 30,000 mg/kg* Dermal LD50 (rabbits):> 1,200 mg/kg <i>Reaction product: Bisphenol F-(epichlorohydrin); epoxy resin-</i> Oral LD50 (rats): >2,000 mg/kg Estimated*Dermal: prolonged skin contact is unlikely to result in absorption of harmful amounts. The Dermal LD50 has not been determined.
Skin Corrosion/Irritation	Not available
Respiratory or Skin Sensitization	Not available
Other Information	Not available

SECTION 12 – ECOLOGICAL INFORMATION

Material not readily biodegradable

SECTION 13 – DISPOSAL CONSIDERATIONS

Disposal Considerations	Any disposal practice must be in accordance with Municipal, Provincial and Federal regulations. Chemical additions, processing, storage, or otherwise altering this material may make the waste management information presented in this SDS incomplete, inaccurate, or otherwise inappropriate. Do not allow into any sewers, on the ground or into any body of water. Dispose of any unused, uncontaminated, as well as contaminated product, by a properly licensed company.
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SECTION 14 – TRANSPORTATION INFORMATION

TDG (Canada)	
TDG Proper Shipping Name	This product is not regulated by TDG when shipped domestically by land.
DOT	Not regulated for Transport.
SEA transport (IMO-IMDG)	
Proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID N.O.S.(EPOXY RESIN)
U.N. Number	UN 3082
Class	9
Packing Group	III
Marine pollutant	Epoxy resin

Transport in bulk

Consult IMO regulations before transporting ocean bulk according to Annex I or II of Marpol 73/78 and the IBC or IGC Code.

Air transport (IATA-ICAO)**Proper shipping name**

ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID N.O.S.(EPOXY RESIN)

U.N. Number

UN 3082

Class

9

Packing Group

III

Note

No additional remark

SECTION 15 – REGULATORY INFORMATION**TSCA**

All ingredients are on the TSCA Chemical Substance Inventory; or are not required to be listed on the TSCA inventory.

DSL

The substance(s) in this product is/are on the Canadian Domestic Substances List.

WHMIS

D2B

SECTION 16 – OTHER INFORMATION

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END OF SDS