

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

- 1.1 Product identifier** EPO-TEK H20E Part A
 GHS Product Identifier EPO-TEK H20E Part A
 Chemical Name Not applicable
 Trade name EPO-TEK H20E Part A
 CAS No. Mixture
 EINECS No. Mixture
 REACH Registration No. Not available
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
 Identified use(s)
 Uses advised against Users are recommended to seek further advice.
- 1.3 Details of the supplier of the safety data sheet**
 Company Identification Epoxy Technology, Inc.
 Address 14 Fortune Drive, Billerica MA 01821 USA
 Telephone (978) 667-3805
 E-Mail (competent person) techserv@epotek.com
- 1.4 Emergency telephone number – Chemtel Inc.**
Emergency Phone No. (800) 255-3924 , (813) 248-0585

**SECTION 2: HAZARDS IDENTIFICATION**

- 2.1 Classification of the substance or mixture**
- 2.1.1 Regulation (EC) No. 1272/2008 (CLP) - Acute toxicity 5, Skin irritation 2, Eye Damage 3, Skin Sensitizer 1 (3.1/5, 3.2/2, 3.3/2, 3.4/1)**
- 2.1.2 Directive 67/548/EEC & Directive 1999/45/EC - HARMFUL, IRRITANT**
- 2.2 Label elements**
- 2.2.1 Label elements According to Regulation (EC) No. 1272/2008 (CLP)**
 GHS Product Identifier (EU)
- Hazard pictogram(s) Signal word(s) **WARNING**
- Hazard statement(s)
 H303: May be harmful if swallowed.
 H315: Causes skin irritation.
 H317: May cause an allergic skin reaction.
 H319: Causes serious eye irritation.
 H411: Toxic to aquatic life with long lasting effects.
- Precautionary statement(s)
 EUH205: Contains epoxy constituents. See information supplied by the manufacturer.
 P280: Wear protective gloves/protective clothing/eye protection/face protection.
 P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
 P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
 P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P312: Call a POISON CENTER or doctor if you feel unwell.
 P332 + P313: If skin irritation occurs: Get medical advice/attention.
 P501: Dispose of contents/container to: Send to a licensed recycler, reclaimer or incinerator.
- 2.2.2 Label elements According to Directive 67/548/EEC & Directive 1999/45/EC**
- Hazard Symbol
- Risk Phrases
 R22: Harmful if swallowed.
 R36/38: Irritating to eyes and skin.
 R43: May cause sensitization by skin contact.
 R51: Toxic to aquatic organisms
- Safety Phrases
 S2: Keep out of the reach of children.
 S23: Do not breathe fumes/vapor.
 S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 S36/39: Wear suitable protective clothing and eye/face protection.
 S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
 S56: Dispose of this material and its container at hazardous or special waste collection point.

- 2.3 Other hazards** **GHS Classification (USA): Hazardous under OSHA Hazard Communication Standard – Sensitizer (Skin), Irritant (Eyes, Skin)**
HMIS: Health-2, Flammability-1, Reactivity – 0
- WHMIS Classification (Canada): Hazardous under WHMIS Class D2B – Material Causing Other Toxic Effects (Sensitizer, Irritation)**



- 2.4 Additional Information** **None**

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

EC Classification No. 1272/2008/EC

Hazardous ingredient(s)	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard pictogram(s) and Hazard statement(s)
Epoxy Phenol Novolac	30-50%	28064-14-4	None	NA	 3.1/5, 3.2/2, 3.4/1, 3.3/2, 4.1/2 H303, H315, H317, H319, H411, EUH205

EC Classification No. 67/548/EEC

Hazardous ingredient(s)	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard pictogram(s) and Risk (R) Phras(es)
Epoxy Phenol Novolac	30-50%	28064-14-4	None	NA	 Xn, Xi; R22, 36/38, 43, 51

3.3 Additional Information

- For full text of H phrases see section 16. For full text of R phrases see section 16. Non-Hazardous ingredients are not listed and make up the balance of the product.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation	Remove patient from exposure. Keep patient at rest and give oxygen if breathing difficult. If symptoms develop, obtain medical attention.
Skin Contact	Remove contaminated clothing immediately and drench affected skin with plenty of water. If irritation (redness, rash, blistering) develops, get medical attention.
Eye Contact	Irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 15 minutes. Obtain immediate medical attention.
Ingestion	Ingestion may cause irritation of the gastrointestinal tract. If swallowed, seek medical advice immediately and show this container or label. Do not induce vomiting. Make victim drink plenty of water. Get immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Acute: Causes serious eye irritation. Causes skin irritation. Allergic contact dermatitis. Ingestion may cause irritation of the gastrointestinal tract.

Delayed and chronic effects: Allergic eczema.

4.3 Indication of the immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: FIRE-FIGHTING MEASURES

Combustible but not readily ignited. Acrid smoke. Flash Point > 93.3°C / 200°F.

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|------------|--|--|
| 5.1 | Extinguishing media | |
| | Suitable Extinguishing Media | Extinguish preferably with dry chemical, foam or water spray. |
| | Unsuitable Extinguishing Media | None known. |
| 5.2 | Special hazards arising from the substance or mixture | A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions. |
| 5.3 | Advice for fire-fighters | Extinguish preferably with dry chemical, foam or water spray. |

SECTION 6: ACCIDENTAL RELEASE MEASURES

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|------------|--|---|
| 6.1 | Personal precautions, protective equipment and emergency procedures | Ensure full personal protection (including respiratory protection) during removal of spillages. |
| 6.2 | Environmental Precautions | Ventilation recommended. |
| 6.3 | Methods and material for containment and cleaning up | Transfer to a lidded container for disposal or recovery. |
| 6.4 | Reference to other sections | See Also Section 7, 8, 13. |
| 6.5 | Additional Information | None |

SECTION 7: HANDLING AND STORAGE

- | | | |
|------------|---|---|
| 7.1 | Precautions for safe handling | Avoid ingestion. Use only in well-ventilated areas. Avoid inhalation of high concentrations of vapors. Keep away from oxidizing agents. Keep away from fire, sparks and heated surfaces - no smoking. |
| 7.2 | Conditions for safe storage, including any incompatibilities | Protect from sunlight. Store in a well-ventilated place. Do not use or store near heat or open flame. Do not store and transport with oxidizers etc. |
| | Storage Temperature | Ambient. |
| | Storage Life | Not available |
| | Incompatible materials | Oxidizing agents |
| 7.3 | Specific end use(s) | Consult the supplier. |

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

SUBSTANCE.	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note:
Epoxy Phenol Novolac	28064-14-4	NE	NE	NE	NE	PEL (OSHA)
		NE	NE	NE	NE	TLV (ACGIH)

8.1.2 Biological limit value





Limit value type (country of origin)	SUBSTANCE.	CAS No.	Biological limit value	Note:
USA	None	None	None	None

8.1.3 PNECs and DNELs

DNEL	Oral	Inhalation	Dermal
Industry - Long Term – Local effects	NA	NA	NA
Industry - Long Term - Systemic effects	NA	NA	NA
Industry - Short term - Local effects	NA	NA	NA
Industry - Short term - Systemic effects	NA	NA	NA
Professional - Long Term - Local effects	NA	NA	NA
Professional - Long Term – Systemic effects	NA	NA	NA
Professional - Short term - Local effects	NA	NA	NA
Professional - Short term - Systemic effects	NA	NA	NA
Consumer - Long Term - Local effects	NA	NA	NA
Consumer - Long Term - Systemic effects	NA	NA	NA
Consumer - Short term - Local effects	NA	NA	NA
Consumer - Short term - Systemic effects	NA	NA	NA

	PNEC
Aquatic Compartment	Not available
Terrestrial Compartment	Not available
Atmospheric Compartment	Not available

8.2.2 Personal protection equipment

	Respirators	Wear suitable respiratory protective equipment if exposure to levels above the occupational exposure limit is likely.
	Eye Protection	Safety glasses.
	Gloves	Wear protective gloves.
	Body protection	Wear suitable protective clothing and gloves.
	Engineering Controls	Use adequate ventilation and/or engineering controls in high temperature processing to prevent exposure to vapors.
	Other	Remove contaminated, saturated clothing immediately. Contaminated clothing should be thoroughly cleaned.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Silver paste	Color	Silver paste
Odor	Mild / Slight	Odor Threshold (ppm)	Not available
Melting Point (°C) / Freezing Point (°C)	Not available	Boiling point/boiling range (°C):	Not available
Flash Point (°C)	> 200°F / 93°C	Explosive limit ranges	Not available
Auto Ignition Temperature (°C)	Not available	Decomposition Temperature (°C)	Not available
Explosive properties	Not available	Oxidizing properties	Not available
Flammability (solid, gas)	Not available	pH (Value)	Not available
Evaporation rate	< Butyl Acetate	Vapor Pressure (mm Hg)	Not available
Vapor Density (Air=1)	Not available	Density (g/ml)	Not available
Solubility (Water)	Practically insoluble.	Solubility (Other)	Not available
Partition Coefficient (n-Octanol/water)	Not available	Viscosity (mPa.s)	Not available

9.2 Other information Volatile Organic Chemical (VOC) Content – Not available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity	Slight
10.2 Chemical stability	Stable under normal conditions.
10.3 Possibility of hazardous reactions	Can react violently if in contact with - Oxidizing agents.
10.4 Conditions to avoid	Avoid contact with heat and ignition sources.
10.5 Incompatible materials	Bleaching products and comparable oxidizers,
10.6 Hazardous Decomposition Product(s)	Carbon monoxide, Carbon dioxide

SECTION 11: TOXICOLOGICAL INFORMATION

SUBSTANCE.	CAS No.	LD ₅₀ (Oral, Rat)	LC ₅₀ (Inhalation, Rat)	LD50 (Dermal, Rat)
Epoxy Phenol Novolac	28064-14-4	Not established	Not established	Not established

11.1 Information on toxicological effects

11.1.2 Mixtures

Acute toxicity	May be harmful if swallowed.
Irritation	Causes eye irritation. May cause respiratory irritation. May cause transient irritation.
Corrosivity	Not to be expected.
Sensitization	May cause sensitization by skin contact.
Repeated dose toxicity	No data.
Carcinogenicity	No data.
Mutagenicity	No data.
Toxicity for reproduction	No data.

11.2 Other information None

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity	Harmful to aquatic life. Harmful to algae.
12.2 Persistence and degradability	Biodegradable. Not persistent.
12.3 Bioaccumulative potential	The product has low potential for bioaccumulation.
12.4 Mobility in soil	The product has high mobility in soil.
12.5 Results of PBT and vPvB assessment	No data.
12.6 Other adverse effects	No data.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods	Disposal should be in accordance with local, state or national legislation. Containers must not be punctured or destroyed by burning, even when empty.
13.2 Additional Information	None

SECTION 14: TRANSPORT INFORMATION

Land transport (ADR/RID) (b)(c)(d)

UN number	UN3082
Proper Shipping Name	Environmentally Hazardous Substance, Liquid, n.o.s.
Transport hazard class(es)	9
Packing Group	III
Hazard label(s)	Miscellaneous
Environmental hazards	Marine Pollutant
Special precautions for user	None

Land transport (Within USA) (c)(d)

UN number	UN3082
Proper Shipping Name	Not classified as dangerous for transport.
Transport hazard class(es)	None
Packing Group	None
Hazard label(s)	None
Environmental hazards	None
Special precautions for user	None

Sea transport (IMDG) (b)(c)(d)

UN number	UN3082
Proper Shipping Name	Environmentally Hazardous Substance, Liquid, n.o.s.
Transport hazard class(es)	9
Packing Group	III
Marine Pollutant	Yes
Special precautions for user	None

Air transport (ICAO/IATA) (c) (d)

UN number	UN3082
Proper Shipping Name	Not classified as dangerous for transport.
Transport hazard class(es)	None
Packing Group	None
Environmental hazards	None
Special precautions for user	None

(b)– Full proper shipping name: Environmentally Hazardous Substance, Liquid, n.o.s. (Epoxy Phenol Novolac)

(c)– Consult with transport provider.

(d)– Check relevant regulations for Special Provisions.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1 EU regulations

Authorizations and/or restrictions on use	Consult the supplier.
European Union (EINECS/ELINCS)	All chemicals listed.
German WGK number	Not Applicable.

15.1.2 National regulations

USA

TSCA (Toxic Substance Control Act)	All chemicals listed.
SARA 311/312 - Hazard Categories	Acute Health
SARA 302 - Extremely Hazardous Substances	Listed. - None
SARA 313 - Toxic Chemicals	Contains: None
CERCLA (Comprehensive Environmental Response Compensation	Listed. - None

and Liability Act)

CAA (Clean Air Act 1990)

Listed. – None

CWA (Clean Water Act)

Listed. - None

State Right to Know Lists

Listed – MA, MN, NJ, PA, and RI.

Proposition 65 (California)

Listed. - None

Canada

WHMIS Classification

Class D Division 2, Subdivision B, Material Causing Other Toxic Effects (Sensitizer, Irritation)

Canada (DSL/NDSL)

Listed. - DSL

Canada Ingredient Disclosure List (CIDL) Listed as required.

15.2 Chemical Safety Assessment

Irritant (Skin, Eye), Skin Sensitizer

15.3 Label elements (EU)



Label as Harmful, Irritant under 1999/45/EC, 1907/2006/EC, and 1272/2008/EC. See Section 2 for full label requirements.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1-16.

LEGEND

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
AICS	Australian Inventory of Chemical Substances	NIOSH	National Institute for Occupational Safety and Health
ANSI	American National Standards Institute	ND	not determined
atm	atmosphere (pressure unit)	NFPA	National Fire Prevention Association
BOD	biological oxygen demand	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OC	open cup
CC	closed cup	OSHA	Occupational Safety and Health Administration
CDTA	Chemical Drug and Trafficking Act	Part	partition
COC	Cleveland Open Cup	PEL	permissible exposure limits
COD	chemical oxygen demand	ppb	parts per billion
coeff.	coefficient	PPE	personal protective equipment
CFR	Code of Federal Regulations	ppm	parts per million
CPR	cardio-pulmonary resuscitation	psi	pounds per square inch
DEA	Drug Enforcement Agency	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	RQ	Reportable quantity
DSCL	Dangerous Substances Classification and Labeling	RTK	Right to Know
EEC	European Economic Community	SARA	Superfund Amendments and Reauthorization Act
FDA	Food and Drug Administration	STEL	short-term exposure limit
HMIS	Hazardous Materials Information System	SUSDP	Standard for the Uniform Scheduling of Drugs and Poisons (Australia)
IARC	International Agency for Research on Cancer	TCC	Tagliabue Closed Cup

IDLH	immediate danger to life or health	TDG	Transportation of Dangerous Goods
kg	kilogram	TPQ	threshold planning quantity
L	liter	TQ	threshold quantity
LC50	median lethal concentration	TSCA	Toxic Substances Control Act
LD50	median lethal dose	TWA	time-weighted average
LEL	lower explosive limit	UEL	upper explosive limit
mg	milligram	WES	Workplace Exposure Standard (New Zealand)
mL	milliliter	WHMIS	Workplace Hazardous Material Information System

Risk Phrases and Safety Phrases

R22: Harmful if swallowed.

R36/38: Irritating to eyes and skin.

R43: May cause sensitization by skin contact.

R51: Toxic to aquatic organisms

S2: Keep out of the reach of children.

S23: Do not breathe fumes/vapor.

S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S36/39: Wear suitable protective clothing and eye/face protection.

S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S56: Dispose of this material and its container at hazardous or special waste collection point.

Hazard statement(s) and Precautionary statement(s)

H303: May be harmful if swallowed.

H315: Causes skin irritation.

H317: May cause an allergic skin reaction.

H319: Causes serious eye irritation.

H411: Toxic to aquatic life with long lasting effects.

EUH205: Contains epoxy constituents. See information supplied by the manufacturer.

P280: Wear protective gloves/protective clothing/eye protection/face protection.

P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P302 + P352: IF ON SKIN: Wash with plenty of soap and water.

P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312: Call a POISON CENTER or doctor if you feel unwell.

P332 + P313: If skin irritation occurs: Get medical advice/attention.

P501: Dispose of contents/container to: Send to a licensed recycler, reclaimer or incinerator.

Training advice: None

Additional Information: None

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Epoxy Technology, Inc. gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Epoxy Technology, Inc. accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

- 1.1 Product identifier** EPO-TEK H20E Part B
 GHS Product Identifier EPO-TEK H20E Part B
 Chemical Name Not applicable
 Trade name EPO-TEK H20E Part B
 CAS No. Mixture
 EINECS No. Mixture
 REACH Registration No. Not available
- 1.2 Relevant identified uses of the substance or mixture and uses advised against**
 Identified use(s)
 Uses advised against Users are recommended to seek further advice.
- 1.3 Details of the supplier of the safety data sheet**
 Company Identification Epoxy Technology, Inc.
 Address 14 Fortune Drive, Billerica MA 01821 USA
 Telephone (978) 667-3805
 E-Mail (competent person) techserv@epotek.com
- 1.4 Emergency telephone number – Chemtel Inc.**
Emergency Phone No. (800) 255-3924 , (813) 248-0585

**SECTION 2: HAZARDS IDENTIFICATION**

- 2.1 Classification of the substance or mixture**
2.1.1 Regulation (EC) No. 1272/2008 (CLP) - Acute toxicity 4, Skin Irritation 2, Eye Damage 1, STOT-single exposure 3 (3.1/4, 3.2/2, 3.3/1, 3.8/3c)
2.1.2 Directive 67/548/EEC & Directive 1999/45/EC - CORROSIVE, HARMFUL
- 2.2 Label elements**
2.2.1 Label elements *According to Regulation (EC) No. 1272/2008 (CLP)*
 GHS Product Identifier (EU)
- Hazard pictogram(s) Signal word(s) **DANGER**
- Hazard statement(s) H302: Harmful if swallowed.
 H315: Causes skin irritation.
 H318: Causes serious eye damage.
 H335: May cause respiratory irritation
 H336: May cause drowsiness or dizziness.
- Precautionary statement(s) P202: Do not handle until all safety precautions have been read and understood.
 P280: Wear protective gloves/protective clothing/eye protection/face protection.
 P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
 P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
 P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
 P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P305: IF IN EYES: Get immediate medical attention.
 P332 + P313: If skin irritation occurs: Get medical advice/attention.
 P501: Dispose of contents/container to: Send to a licensed recycler, reclaimer or incinerator.
- 2.2.2 Label elements** *According to Directive 67/548/EEC & Directive 1999/45/EC*
- Hazard Symbol Risk Phrases R22: Harmful if swallowed.
 R37/38: Irritating to respiratory system and skin.
 R41: Risk of serious damage to eyes
 R67: Vapours may cause drowsiness and dizziness.
- Safety Phrases S2: Keep out of the reach of children.
 S23: Do not breathe fumes/vapor.
 S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
 S28: After contact with skin, wash immediately with plenty of soap and water.
 S36/39: Wear suitable protective clothing and eye/face protection.
 S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
 S53: Avoid exposure - obtain special instructions before use.
 S56: Dispose of this material and its container to hazardous or special waste collection point.

2.3 Other hazards **GHS Classification (USA): Hazardous under OSHA Hazard Communication Standard – Corrosive (Eyes), Irritant (Skin)**
HMIS: Health-2, Flammability-1 Reactivity – 1



WHMIS Classification (Canada): Hazardous under WHMIS Class D2A – Material Causing Other Toxic Effects (Corrosive, Irritation), Class E, Corrosive Material.



2.4 Additional Information None

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

EC Classification No. 1272/2008/EC

Hazardous ingredient(s)	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard pictogram(s) and Hazard statement(s)
Reactive Diluent	5-15	Proprietary	Proprietary	NA	3.1/4, 3.3/1, 3.8/3, H302, H318, H336
Substituted Imidazole	5-10	Proprietary	Proprietary	NA	3.1/3, 3.2/2, 3.3/1, 3.8/3 H301, H315, H318, H335

EC Classification No. 67/548/EEC

Hazardous ingredient(s)	%W/W	CAS No.	EC No.	REACH Registration No.	Hazard pictogram(s) and Risk (R) Phras(es)
Reactive Diluent	5-15	Proprietary	Proprietary	NA	Xn, Xi: R22, R41, R67
Substituted Imidazole	5-10	Proprietary	Proprietary	NA	T, Xn: R25, R37/38, R41

3.3 Additional Information

- For full text of H phrases see section 16. For full text of R phrases see section 16. Non-Hazardous ingredients are not listed and make up the balance of the product.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation	May cause respiratory irritation. Remove patient from exposure. Keep patient at rest and give oxygen if breathing difficult. If symptoms develop, obtain medical attention.
Skin Contact	Irritating to the skin. Remove contaminated clothing immediately and drench affected skin with plenty of water, then wash with soap and water. If irritation (redness, rash, blistering) develops, get medical attention.
Eye Contact	May cause corneal injury. May cause corneal damage. Remove any contact lenses.

Irrigate with eyewash solution or clean water, holding the eyelids apart, for at least 15 minutes. Obtain immediate medical attention.

- | | |
|---|--|
| Ingestion | Ingestion will cause irritation of the gastrointestinal tract. If swallowed, seek medical advice immediately and show this container or label. Do not induce vomiting. Make victim drink plenty of water. Get immediate medical attention. |
| 4.2 Most important symptoms and effects, both acute and delayed | <p>Acute: Causes serious eye irritation. Causes skin irritation. Ingestion will cause irritation of the gastrointestinal tract.</p> <p>Delayed and chronic effects: May cause corneal damage. Discolors skin and mucous membranes.</p> |
| 4.3 Indication of the immediate medical attention and special treatment needed | Treat symptomatically. |

SECTION 5: FIRE-FIGHTING MEASURES

Combustible but not readily ignited. Acrid smoke. Flash Point > 93.3°C / 200°F.

- | | |
|--|--|
| 5.1 Extinguishing media | |
| Suitable Extinguishing Media | Extinguish preferably with dry chemical, foam or water spray. |
| Unsuitable Extinguishing Media | None known. |
| 5.2 Special hazards arising from the substance or mixture | A self contained breathing apparatus and suitable protective clothing should be worn in fire conditions. Inhalation of metal fumes from fire may result in metal fume disease. |
| 5.3 Advice for fire-fighters | Extinguish preferably with dry chemical, foam or water spray. Launder contaminated protective devices. |

SECTION 6: ACCIDENTAL RELEASE MEASURES

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|--|--|
| 6.1 Personal precautions, protective equipment and emergency procedures | Ensure full personal protection (including respiratory protection) during removal of spillages. Evacuate if necessary. |
| 6.2 Environmental Precautions | Ventilation recommended. |
| 6.3 Methods and material for containment and cleaning up | Transfer to a lidded container for disposal or recovery. Re-use/recycling of waste highly recommended. |
| 6.4 Reference to other sections | See Also Section 7, 8, 13. |
| 6.5 Additional Information | None |

SECTION 7: HANDLING AND STORAGE

- | | |
|---|---|
| 7.1 Precautions for safe handling | Avoid ingestion. Use only in well-ventilated areas. Avoid inhalation of high concentrations of vapors. Keep away from oxidizing agents. Keep away from fire, sparks and heated surfaces - no smoking. |
| 7.2 Conditions for safe storage, including any incompatibilities | Protect from sunlight. Store in a well-ventilated place. Do not use or store near heat or open flame. Do not store and transport with oxidizers etc. |
| Storage Temperature | Ambient. |
| Storage Life | Not available |

Incompatible materials

Oxidizing agents, Can react violently if in contact with acids, alkalis, reducing agents and heavy metals.

7.3 Specific end use(s) Consult the supplier.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Occupational Exposure Limits

SUBSTANCE.	CAS No.	LTEL (8 hr TWA ppm)	LTEL (8 hr TWA mg/m ³)	STEL (ppm)	STEL (mg/m ³)	Note:
No occupational exposure limits for this product or listed components have been established.						

OELs are not available for non-listed components.

8.1.2 Biological limit value





Limit value type (country of origin)	SUBSTANCE.	CAS No.	Biological limit value	Note:
USA	None	None	None	None

8.1.3 PNECs and DNELs

DNEL	Oral	Inhalation	Dermal
Industry - Long Term – Local effects	NA	NA	NA
Industry - Long Term - Systemic effects	NA	NA	NA
Industry - Short term - Local effects	NA	NA	NA
Industry - Short term - Systemic effects	NA	NA	NA
Professional - Long Term - Local effects	NA	NA	NA
Professional - Long Term – Systemic effects	NA	NA	NA
Professional - Short term - Local effects	NA	NA	NA
Professional - Short term - Systemic effects	NA	NA	NA
Consumer - Long Term - Local effects	NA	NA	NA
Consumer - Long Term - Systemic effects	NA	NA	NA
Consumer - Short term - Local effects	NA	NA	NA
Consumer - Short term - Systemic effects	NA	NA	NA

	PNEC
Aquatic Compartment	Not available
Terrestrial Compartment	Not available
Atmospheric Compartment	Not available

8.2.2 Personal protection equipment

	Respirators	Wear suitable respiratory protective equipment if exposure to levels above the occupational exposure limit is likely.
	Eye Protection	Safety glasses.
	Gloves	Wear protective gloves.
	Body protection	Wear suitable protective clothing and gloves.
	Engineering Controls	Use adequate ventilation and/or engineering controls in high temperature processing to prevent exposure to vapours.
	Other	Remove contaminated, saturated clothing immediately. Contaminated clothing should be thoroughly cleaned.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Silver paste	Color	Silver paste
Odor	Mild / Slight	Odor Threshold (ppm)	Not available
Melting Point (°C) / Freezing Point (°C)	Not available	Boiling point/boiling range (°C):	Not available
Flash Point (°C)	> 200°F / 93°C	Explosive limit ranges	Not available
Auto Ignition Temperature (°C)	Not available	Decomposition Temperature (°C)	Not available
Explosive properties	Not available	Oxidizing properties	Not available
Flammability (solid, gas)	Not available	pH (Value)	Not available
Evaporation rate	Not available	Vapor Pressure (mm Hg)	Not available
Vapor Density (Air=1)	Not available	Density (g/ml)	Not available
Solubility (Water)	Slight.	Solubility (Other)	Not available
Partition Coefficient (n-Octanol/water)	Not available	Viscosity (mPa.s)	Paste

9.2 Other information Volatile Organic Chemical (VOC) Content – Not available.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity	Slight.
10.2 Chemical stability	Stable under normal conditions.
10.3 Possibility of hazardous reactions	Can react violently if in contact with - Oxidizing agents. Can react violently if in contact with acids, alkalis, and reducing agents.
10.4 Conditions to avoid	Avoid contact with heat and ignition sources.
10.5 Incompatible materials	Bleaching products and comparable oxidizers. Can react violently if in contact with acids, alkalis, and reducing agents.
10.6 Hazardous Decomposition Product(s)	Carbon monoxide, Carbon dioxide, Metal fumes and oxides. Thermal decomposition will evolve toxic, irritant and flammable vapors.

SECTION 11: TOXICOLOGICAL INFORMATION

SUBSTANCE.	CAS No.	LD ₅₀ (Oral, Rat)	LC ₅₀ (Inhalation, Rat)	LD ₅₀ (Dermal, Rat)
Reactive Diluent	Proprietary	1540 mg/kg	5100 mg/m ³ / 4H	5000 mg/kg (guinea pig)
Substituted Imidazole	Proprietary	Not established	Not established	Not established

11.1 Information on toxicological effects

11.1.2 Mixtures

Acute toxicity	Harmful if swallowed. Ingestion may cause irritation of the gastrointestinal tract. May cause drowsiness or dizziness.
Irritation	May skin and eye irritation.
Corrosivity	May skin and eye irritation.
Repeated dose toxicity	Expected to be similar to single exposures.
Carcinogenicity	No data.
Mutagenicity	No data.
Toxicity for reproduction	No data.

11.2 Other information

None

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity	Harmful to aquatic life. Harmful to algae.
12.2 Persistence and degradability	Moderately/partially biodegradable. The methods for determining the biological degradability are not applicable to inorganic substances such as silver ..
12.3 Bioaccumulative potential	Moderately/partially biodegradable.
12.4 Mobility in soil	The product has moderate mobility in soil. Silver has low mobility in soils and sediments.
12.5 Results of PBT and vPvB assessment	No data.
12.6 Other adverse effects	No data.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods	Disposal should be in accordance with local, state or national legislation. Containers must not be punctured or destroyed by burning, even when empty.
13.2 Additional Information	None

SECTION 14: TRANSPORT INFORMATION
Land transport (ADR/RID) (c)(d)

UN number	
Proper Shipping Name	Not classified as dangerous for transport.
Transport hazard class(es)	None
Packing Group	None
Hazard label(s)	None
Environmental hazards	None
Special precautions for user	None

Sea transport (IMDG) (c)(d)

UN number	
Proper Shipping Name	Not classified as dangerous for transport.
Transport hazard class(es)	None
Packing Group	None
Marine Pollutant	None
Special precautions for user	None

Land transport (Within USA) (c)(d)

UN number	
Proper Shipping Name	Not classified as dangerous for transport.
Transport hazard class(es)	None
Packing Group	None
Hazard label(s)	None
Environmental hazards	None
Special precautions for user	None

Air transport (ICAO/IATA) (c) (d)

UN number	
Proper Shipping Name	Not classified as dangerous for transport.
Transport hazard class(es)	None
Packing Group	None
Environmental hazards	None
Special precautions for user	None

*(c)– Consult with transport provider.**(d)– Check relevant regulations for Special Provisions.***Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**
SECTION 15: REGULATORY INFORMATION
15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**15.1.1 EU regulations**

Authorizations and/or restrictions on use	Consult the supplier.
European Union (EINECS/ELINCS)	All chemicals listed
German WGK number	2

15.1.2 National regulations**USA**

TSCA (Toxic Substance Control Act)	All chemicals listed.
SARA 311/312 - Hazard Categories	Acute Health
SARA 302 - Extremely Hazardous Substances	Listed. - None
SARA 313 - Toxic Chemicals	Listed. – None..
CERCLA (Comprehensive Environmental Response Compensation and Liability Act)	Listed. – None.
CAA (Clean Air Act 1990)	Listed. – None.
CWA (Clean Water Act)	Listed. - None.
State Right to Know Lists	Listed. –MA, NJ, PA, and RI.

Proposition 65 (California) - This product contains the following substance(s) known to the state of California to cause cancer and/or reproductive harm; Acrylonitrile (CAS # 107-13-1), <0.05%.

Canada

WHMIS Classification	Class D Division 2, Subdivision A Very Toxic Material Class E, Corrosive Material
Canada (DSL/NDSL)	Listed. - DSL
Canada Ingredient Disclosure List (CIDL)	Listed as required.

Japan

Deleterious Substance Law	Regulated
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15.2 Chemical Safety Assessment

Corrosive (Eye), Irritant (Skin, Respiratory system),

15.3 Label elements (EU)



Label as Corrosive, Harmful, under 1272/2008/EC and 1997/2006/EC, and Harmful under 1999/45/EC. See Section 2 for full label requirements.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1-16.

LEGEND

ACGIH	American Conference of Governmental Industrial Hygienists	NA	not applicable, not available
AICS	Australian Inventory of Chemical Substances	NIOSH	National Institute for Occupational Safety and Health
ANSI	American National Standards Institute	ND	not determined
atm	atmosphere (pressure unit)	NFPA	National Fire Prevention Association
BOD	biological oxygen demand	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OC	open cup
CC	closed cup	OSHA	Occupational Safety and Health Administration
CDTA	Chemical Drug and Trafficking Act	Part	partition
COC	Cleveland Open Cup	PEL	permissible exposure limits
COD	chemical oxygen demand	ppb	parts per billion
coeff.	coefficient	PPE	personal protective equipment
CFR	Code of Federal Regulations	ppm	parts per million
CPR	cardio-pulmonary resuscitation	psi	pounds per square inch
DEA	Drug Enforcement Agency	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	RQ	Reportable quantity
DSCL	Dangerous Substances Classification and Labeling	RTK	Right to Know
EEC	European Economic Community	SARA	Superfund Amendments and Reauthorization Act
FDA	Food and Drug Administration	STEL	short-term exposure limit
HMIS	Hazardous Materials Information System	SUSDP	Standard for the Uniform Scheduling of Drugs and Poisons (Australia)
IARC	International Agency for Research on Cancer	TCC	Tagliabue Closed Cup
IDLH	immediate danger to life or health	TDG	Transportation of Dangerous Goods
kg	kilogram	TPQ	threshold planning quantity
L	liter	TQ	threshold quantity
LC50	median lethal concentration	TSCA	Toxic Substances Control Act
LD50	median lethal dose	TWA	time-weighted average
LEL	lower explosive limit	UEL	upper explosive limit
mg	milligram	WES	Workplace Exposure Standard (New Zealand)
mL	milliliter	WHMIS	Workplace Hazardous Material Information System

References: RTECS, CAS Registry, EINECS/ESIS, *Casarett & Doull's Toxicology*, *Goldfrank's Toxicological Emergencies*, Manufacturer Information

Risk Phrases and Safety Phrases

R22: Harmful if swallowed.
R25: Toxic if swallowed
R37/38: Irritating to respiratory system and skin.
R41: Risk of serious damage to eyes
R67: Vapors may cause drowsiness and dizziness.
S2: Keep out of the reach of children.
S23: Do not breathe fumes/vapor.
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28: After contact with skin, wash immediately with plenty of soap and water.
S36/39: Wear suitable protective clothing and eye/face protection.
S45: In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S53: Avoid exposure - obtain special instructions before use.
S56: Dispose of this material and its container to hazardous or special waste collection point.

Hazard statement(s) and Precautionary statement(s)

H301: Toxic if swallowed.
H302: Harmful if swallowed.
H315: Causes skin irritation.
H318: Causes serious eye damage.
H335: May cause respiratory irritation
H336: May cause drowsiness or dizziness.
P202: Do not handle until all safety precautions have been read and understood.
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301 + P330 + P331: IF SWALLOWED: rinse mouth. Do NOT induce vomiting.
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P305: IF IN EYES: Get immediate medical attention.
P332 + P313: If skin irritation occurs: Get medical advice/attention.
P501: Dispose of contents/container to: Send to a licensed recycler, reclaimer or incinerator.

Training advice: None

Additional Information: None

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