

This safety data sheet was created pursuant to the requirements of:
Regulation (EC) No. 1907/2006 and Regulation (EC) No. 1272/2008

Issuing Date 28-Feb-2017

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Revision Number 3

EGHS / English

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

1.1. Product identifier

Product Name EpoxiCure 2 Hardener
Product Code(s) 20-3432-016, 20-3432-032
(M)SDS Number 1350313_E
Chemical name

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

Recommended Use Laboratory Use Only.
Uses advised against No information available.

1.3. Details of the supplier of the safety data sheet

Manufacturer ITW Test & Measurement GmbH
Manufacturer Address Boschstraße 10
73734 Esslingen am Neckar / GERMANY
www.buehler-met.de www.buehler.fr www.buehler.co.uk
Phone number +49 (0) 711 4904690-0
E-mail Address lab.eu@buehler.com

1.4. Emergency telephone number

Global Access Code: 334545
Americas: +1 760 476 3962 Europe: +1 760 476 3961
Middle East/Africa: +1 760 476 3959 Asia Pacific: +1 760 476 3960
UK: +44 8 08 189 0979

Section 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Regulation (EC) No 1272/2008

Acute toxicity - Oral	Category 4 - (H302)
Acute toxicity - Dermal	Category 4 - (H312)
Skin corrosion/irritation	Category 1 Sub-category B - (H314)
Serious eye damage/eye irritation	Category 1 - (H318)
Skin sensitization	Category 1 - (H317)
Chronic aquatic toxicity	Category 2 - (H411)

2.2. Label elements**Signal word****Danger****Hazard Statements**

- H302 - Harmful if swallowed
- H312 - Harmful in contact with skin
- H314 - Causes severe skin burns and eye damage
- H317 - May cause an allergic skin reaction
- H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements - EU (§28, 1272/2008)

- P280 - Wear protective gloves/protective clothing/eye protection/face protection
- P260 - Do not breathe dust/fume/gas/mist/vapors/spray
- P303 + P361 + P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
- 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
- P301 + P330 + P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting
- P501 - Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable

2.3. Other hazards

No information available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS**3.1 Substances**

Not applicable.

3.2 Mixtures

Chemical name	EC No	CAS No.	Weight-%	Classification according	REACH Reg.
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				to Regulation (EC) No. 1272/2008 [CLP]	No.
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-(2-aminomethylethoxy)-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1)	-	39423-51-3	30 - 50%	No data available	No data available
Triethylene tetramine	-	112-24-3	10 - 30%	Acute Tox. 4 (H312) Skin Corr. 1B (H314) Skin Sens. 1 (H317) Aquatic Chronic 3 (H412)	No data available
Diethylene triamine	203-865-4	111-40-0	10 - 30%	Acute Tox. 4 (H302) Acute Tox. 4 (H312) Acute Tox. 2 (H331) Skin Corr. 1B (H314) Skin Sens. 1 (H317) STOT SE 3 (H335)	No data available

Full text of H- and EUH-phrases: see section 16

This product does not contain candidate substances of very high concern at a concentration $\geq 0.1\%$ (Regulation (EC) No. 1907/2006 (REACH), Article 59)

Chemical name	CAS No.	SVHC candidates
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-(2-aminomethylethoxy)-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1)	39423-51-3	-
Triethylene tetramine	112-24-3	-
Diethylene triamine	111-40-0	-

Section 4: FIRST AID MEASURES

4.1. Description of first aid measures

General advice

Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

Inhalation

Remove to fresh air. If breathing has stopped, give artificial respiration. Get medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If breathing is difficult, (trained personnel should) give oxygen. Delayed pulmonary edema may occur. Get immediate medical advice/attention.

Skin contact

Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Get immediate medical advice/attention. May cause an allergic skin reaction.

Eye contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice/attention.

Ingestion	Do NOT induce vomiting. Clean mouth with water and drink afterwards plenty of water. Never give anything by mouth to an unconscious person. Get immediate medical advice/attention.
Self-protection of the first aider	Ensure that medical personnel are aware of the material(s) involved, take precautions to protect themselves and prevent spread of contamination. Wear personal protective clothing (see section 8). Avoid contact with skin, eyes or clothing. Avoid direct contact with skin. Use barrier to give mouth-to-mouth resuscitation.

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

Symptoms	Burning sensation. Itching. Rashes. Hives.
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4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians	Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. May cause sensitization in susceptible persons. Treat symptomatically.
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Section 5: FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
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Unsuitable extinguishing media No information available.

5.2. Special hazards arising from the substance or mixture

Specific hazards arising from the chemical

The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. Product is or contains a sensitizer. May cause sensitization by skin contact.

5.3. Advice for firefighters

Special protective equipment for fire-fighters

Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

Section 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Personal precautions	Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Use personal protective equipment as required. Attention! Corrosive material. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
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Other Information Refer to protective measures listed in Sections 7 and 8.

For emergency responders Use personal protection recommended in Section 8.

6.2. Environmental precautions

Environmental precautions Prevent further leakage or spillage if safe to do so. Should not be released into the environment. Do not allow to enter into soil/subsoil. Prevent product from entering drains.

6.3. Methods and material for containment and cleaning up

Methods for containment Prevent further leakage or spillage if safe to do so.

Methods for cleaning up Take up mechanically, placing in appropriate containers for disposal.

6.4. Reference to other sections

Reference to other sections See section 8 for more information. See section 13 for more information.

Section 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Advice on safe handling Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes or clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation. Do not eat, drink or smoke when using this product. Take off contaminated clothing and wash before reuse.

General Hygiene Considerations Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Wash hands before breaks and immediately after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. Store locked up. Protect from moisture. Store away from other materials.

7.3. Specific end use(s)

Risk Management Methods (RMM) The information required is contained in this Material Safety Data Sheet.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Exposure Limits

Chemical name	EU	United Kingdom	France	Spain	Germany
Diethylene triamine 111-40-0	-	STEL: 3 ppm STEL: 12.9 mg/m ³ TWA: 1 ppm	TWA: 1 ppm TWA: 4 mg/m ³	vía dérmica* TWA: 1 ppm TWA: 4.3 mg/m ³	-

		TWA: 4.3 mg/m ³ Sk*			
Chemical name	Italy	Portugal	Netherlands	Finland	Denmark
Diethylene triamine 111-40-0	-	TWA: 1 ppm	-	TWA: 1 ppm TWA: 4.3 mg/m ³ STEL: 3 ppm STEL: 13 mg/m ³ iho*	TWA: 1 ppm TWA: 4 mg/m ³ H*
Chemical name	Austria	Switzerland	Poland	Norway	Ireland
Triethylene tetramine 112-24-3	-	-	STEL: 3 mg/m ³ TWA: 1 mg/m ³	TWA: 1 ppm TWA: 6 mg/m ³ STEL: 3 ppm STEL: 12 mg/m ³	-
Diethylene triamine 111-40-0	TWA: 1 ppm TWA: 4 mg/m ³	H* TWA: 1 ppm TWA: 4 mg/m ³	P* STEL: 12 mg/m ³ TWA: 4 mg/m ³	TWA: 1 ppm TWA: 4 mg/m ³ H* STEL: 3 ppm STEL: 8 mg/m ³	TWA: 1 ppm TWA: 4 mg/m ³ STEL: 3 ppm STEL: 12 mg/m ³ Sk*

Derived No Effect Level (DNEL) No information available

Predicted No Effect Concentration (PNEC) No information available

8.2. Exposure controls

Personal protective equipment

- Eye/face protection** Face protection shield.
- Hand Protection** Wear suitable gloves. Impervious gloves.
- Skin and body protection** Wear suitable protective clothing. Long sleeved clothing. Chemical resistant apron.

Environmental exposure controls No information available.

Section 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state Liquid
Appearance Clear to yellow
Odor Characteristic
Color No information available
Odor Threshold No information available

<u>Property</u>	<u>Values</u>	<u>Remarks Method</u>
pH	No data available	
Melting / freezing point	No data available	None known
Boiling point / boiling range	No data available	None known
Flash Point	100 °C	
Evaporation Rate	No data available	None known
Flammability (solid, gas)	No data available	None known
Flammability Limit in Air		None known

Upper flammability limit	No data available	
Lower flammability limit	No data available	
Vapor pressure	No data available	None known
Vapor density	No data available	None known
Relative density	1.03	
Water Solubility	Soluble in water	
Solubility(ies)	No data available	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition temperature	No data available	None known
Decomposition temperature	No data available	None known
Kinematic viscosity	No data available	None known
Viscosity	No data available	None known

9.2. Other information

Softening Point	No information available
Molecular Weight	No information available
VOC Content (%)	No information available
Liquid Density	No information available
Bulk Density	No information available
Particle Size	No information available
Particle Size Distribution	No information available

Section 10: STABILITY AND REACTIVITY

10.1. Reactivity

No data available.

10.2. Chemical stability

Stable under normal conditions.

Explosion Data

Sensitivity to Mechanical Impact	None.
Sensitivity to Static Discharge	None.

10.3. Possibility of hazardous reactions

Possibility of Hazardous Reactions	None under normal processing.
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10.4. Conditions to avoid

Exposure to air or moisture over prolonged periods.

10.5. Incompatible materials

Acids, Bases, Oxidizing agent.

10.6. Hazardous decomposition products

None under normal use conditions.

Section 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Information on likely routes of exposure**Product Information**

Inhalation	Specific test data for the substance or mixture is not available. Corrosive by inhalation. (based on components). Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Inhaled corrosive substances can lead to a toxic edema of the lungs. Pulmonary edema can be fatal. May cause irritation of respiratory tract.
Eye contact	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Corrosive to the eyes and may cause severe damage including blindness. Causes serious eye damage. May cause irreversible damage to eyes.
Skin contact	Specific test data for the substance or mixture is not available. Corrosive. (based on components). Causes burns. May be absorbed through the skin in harmful amounts. Harmful in contact with skin.
Ingestion	Specific test data for the substance or mixture is not available. Causes burns. (based on components). Ingestion causes burns of the upper digestive and respiratory tracts. May cause severe burning pain in the mouth and stomach with vomiting and diarrhea of dark blood. Blood pressure may decrease. Brownish or yellowish stains may be seen around the mouth. Swelling of the throat may cause shortness of breath and choking. May cause lung damage if swallowed. May be fatal if swallowed and enters airways.

Information on toxicological effects

Symptoms	Redness. Burning. May cause blindness. Coughing and/ or wheezing. Itching. Rashes. Hives.
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Numerical measures of toxicity**Acute Toxicity**

The following values are calculated based on chapter 3.1 of the GHS document

ATEmix (oral)	1,793.00 mg/kg
ATEmix (dermal)	1,100.00 mg/kg
ATEmix (inhalation-dust/mist)	70.00 mg/L

Unknown acute toxicity

- 100 % of the mixture consists of ingredient(s) of unknown toxicity
- 50 % of the mixture consists of ingredient(s) of unknown acute oral toxicity
- 50 % of the mixture consists of ingredient(s) of unknown acute dermal toxicity
- 100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (gas)
- 100 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (vapor)
- 85 % of the mixture consists of ingredient(s) of unknown acute inhalation toxicity (dust/mist)

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Triethylene tetramine	= 2500 mg/kg (Rat)	= 550 mg/kg (Rabbit)	-
Diethylene triamine	= 1080 mg/kg (Rat)	= 672 mg/kg (Rabbit)	= 70 mg/L (Rat) 4 h

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation	Classification based on data available for ingredients. Causes burns.
Serious eye damage/eye irritation	Classification based on data available for ingredients. Risk of serious damage to eyes. Causes burns.
Respiratory or skin sensitization	May cause sensitization by skin contact.
Germ cell mutagenicity	No information available.
Carcinogenicity	No information available.
Reproductive Toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Aspiration hazard	No information available.

Section 12: ECOLOGICAL INFORMATION**12.1. Toxicity**

Ecotoxicity Toxic to aquatic life with long lasting effects.

Chemical name	Toxicity to Algae	Toxicity to Fish	Toxicity to Microorganisms	Daphnia Magna (Water Flea)
Triethylene tetramine	72h EC50: = 2.5 mg/L (Desmodesmus subspicatus) 96h EC50: = 3.7 mg/L (Pseudokirchneriella subcapitata) 72h EC50: = 20 mg/L (Pseudokirchneriella subcapitata)	96h LC50: = 570 mg/L (Poecilia reticulata) 96h LC50: = 495 mg/L (Pimephales promelas)	-	48h EC50: = 31.1 mg/L
Diethylene triamine	72h EC50: = 1164 mg/L (Pseudokirchneriella subcapitata) 96h EC50: = 345.6 mg/L (Pseudokirchneriella subcapitata) 96h EC50: =	96h LC50: = 430 mg/L (Leuciscus idus) 96h LC50: = 1014 mg/L (Poecilia reticulata) 96h LC50: = 248 mg/L (Poecilia reticulata)	EC50 = 2000 mg/L 1 h EC50 = 96 mg/L 17 h	24h EC50: = 37 mg/L 48h EC50: = 16 mg/L

	592 mg/L (Desmodesmus subspicatus)			
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12.2. Persistence and degradability

Persistence and Degradability No information available.

12.3. Bioaccumulative potential**Bioaccumulation**

Chemical name	Log Pow
Triethylene tetramine	-1.4
Diethylene triamine	-1.3

12.4. Mobility in soil

Mobility in soil No information available.

12.5. Results of PBT and vPvB assessment

PBT and vPvB assessment No information available.

Chemical name	PBT and vPvB assessment
Poly[oxy(methyl-1,2-ethanediyl)], .alpha.-hydro-.omega.-(2-aminomethylethoxy)-, ether with 2-ethyl-2-(hydroxymethyl)-1,3-propanediol (3:1)	The substance is not PBT / vPvB
Diethylene triamine	The substance is not PBT / vPvB

12.6. Other adverse effects

Other adverse effects No information available.

Endocrine Disruptor Information

Chemical name	EU - Endocrine Disruptors Candidate List	EU - Endocrine Disruptors - Evaluated Substances
Triethylene tetramine	Group III Chemical	-

Section 13: DISPOSAL CONSIDERATIONS**13.1. Waste treatment methods**

Waste from residues/unused products Dispose of in accordance with local regulations. Dispose of waste in accordance with environmental legislation.

Contaminated packaging No information available.

Section 14: TRANSPORT INFORMATION**IMDG/IMO**

14.1 UN-No.

UN2735

14.2 Proper Shipping Name

POLYAMINES, LIQUID, CORROSIVE, N.O.S.

Description	UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENE TETRAMINE, DIETHYLENE TRIAMINE), 8, III
14.3 Hazard Class	8
14.4 Packing group	III
14.5 Marine Pollutant	Not applicable
14.6 Special Provisions	None
EmS-No.	F-A, S-B
14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code	No information available

RID

14.1 UN-No.	UN2735
14.2 Proper Shipping Name Description	POLYAMINES, LIQUID, CORROSIVE, N.O.S. UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENE TETRAMINE, DIETHYLENE TRIAMINE), 8, III
14.3 Hazard Class	8
14.4 Packing Group	III
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	None
Classification code	C7

ADR

14.1 UN-No.	UN2735
14.2 Proper Shipping Name Description	POLYAMINES, LIQUID, CORROSIVE, N.O.S. UN2735, POLYAMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENE TETRAMINE, DIETHYLENE TRIAMINE), 8, III
14.3 Hazard Class	8
14.4 Packing Group	III
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	None 274
Classification code	C7
Tunnel restriction code	(E)

IATA

14.1 UN-No.	UN2735
14.2 Proper Shipping Name Description	AMINES, LIQUID, CORROSIVE, N.O.S. UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (TRIETHYLENE TETRAMINE, DIETHYLENE TRIAMINE), 8, III
14.3 Hazard Class	8
14.4 Packing group	III
14.5 Environmental hazard	Not applicable
14.6 Special Provisions	None

ERG Code	8L
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Section 15: REGULATORY INFORMATION

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

France
Occupational Illnesses (R-463-3, France)

Chemical name	French RG number	Title
Triethylene tetramine 112-24-3	RG 49, RG 49bis	-
Diethylene triamine 111-40-0	RG 49, RG 49bis	-

Water hazard class (WGK) hazardous to water (WGK 2)

European Union

Take note of Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work .

Authorizations and/or restrictions on use:

This product does not contain substances subject to authorization (Regulation (EC) No. 1907/2006 (REACH), Annex XIV). This product does not contain substances subject to restriction (Regulation (EC) No. 1907/2006 (REACH), Annex XVII).

Persistent Organic Pollutants

Not applicable.

Dangerous substance category per Seveso Directive (2012/18/EU)

E2 - Hazardous to the Aquatic Environment in Category Chronic 2

Ozone-depleting substances (ODS) regulation (EC) 1005/2009

Not applicable.

International Inventories

TSCA	Contact supplier for inventory compliance status.
DSL/NDSL	Contact supplier for inventory compliance status.
EINECS/ELINCS	Contact supplier for inventory compliance status.
ENCS	Contact supplier for inventory compliance status.
IECSC	Contact supplier for inventory compliance status.
KECL	Contact supplier for inventory compliance status.
PICCS	Contact supplier for inventory compliance status.
AICS	Contact supplier for inventory compliance status.

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

15.2. Chemical safety assessment

No information available.

Section 16: OTHER INFORMATION

Key or legend to abbreviations and acronyms used in the safety data sheet**Full text of H-Statements referred to under sections 2 and 3**

H302 - Harmful if swallowed
 H312 - Harmful in contact with skin
 H314 - Causes severe skin burns and eye damage
 H317 - May cause an allergic skin reaction
 H412 - Harmful to aquatic life with long lasting effects

Legend

SVHC: Substances of Very High Concern for Authorization:

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	-	Skin designation

Key literature references and sources for data

www.ChemADVISOR.com/

Issuing Date 15-Sep-2016

Revision Date 05-Aug-2019

This safety data sheet complies with the requirements of: Regulation (EC) No. 1907/2006.

Disclaimer

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End of Safety Data Sheet