

SAFETY DATA SHEET**Product Name:** 2:1 Ratio Clear Epoxy Hardener**Data Sheet:** 419**Revision:** B**Date:** 1/06/2020**1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND COMPANY / UNDERTAKING****1.1 Product Identifier:****Trade Name:** 2:1 Ratio Clear Epoxy Hardener.
Product Type: Component of epoxy coating .**1.2 Relevant identified uses of the substance or mixture and uses advised against****Relevant identified uses:** Epoxy resin hardening agent. Professional use in liquid craft and flooring systems.**Uses advised against:** For further information, refer to section 16.**1.3 Details of the supplier of the safety data sheet**Jem Products Ltd Limited
Unit 20 Sycamore Trading Estate
Blackpool
Lancashire
FY4 3RL, UK**1.4 Emergency telephone number:** NHS 111 or 999**2. HAZARDS IDENTIFICATION****2.1 Classification of the substance or mixture****In compliance with EC regulation No. 1272/2008 and its amendments.**

Acute Tox. 4	H302	Harmful if swallowed
Skin Corr. 1C	H314	Causes severe skin burns and eye damage
Eye Dam. 1	H318	Causes serious eye damage
Skin Sens. 1	H317	May cause an allergic skin reaction.
Aquatic Chronic	H412	Harmful to aquatic life with long lasting effects

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

Hazard Pictograms

GHS05 GHS07

Signal word: DANGER**Hazard-determining components of labelling:**Benzyl alcohol
Polyoxypropylenediamine
3-aminomethyl-3,5,5-trimethylcyclohexylamine
trimethylhexane-1,6-diamine

Hazard Statements

H302	Harmful if inhaled
H314	Causes severe skin burns and eye damage
H317	May cause allergic skin reaction
H412	Harmful to aquatic life with long lasting effects

Precautionary statements

P260	Do not breathe dust/fume/gas/mist/vapors/spray.
P303+P361+P353	IF ON SKIN (or hair) Remove / 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 easy to do. Continue rinsing
P310	Immediately call a POISON CENTER/doctor
P405	Store locked up
P501	Dispose of contents/container in accordance with local/regional/national/international regulations

2.3 Other hazards**Results of PBT and vPvB assessment**

PBT: Not applicable
vPvB: Not applicable

3. COMPOSITION / INFORMATION ON INGREDIENTS**3.1 Substances****3.2 Mixtures:**

Description: Epoxy resin hardening agent, formulation on aliphatic polyamine basis

Dangerous components:

CAS: 100-51-6 EINECS: 202-859-9 Index number:603-057-00-5 Reg.nr.: 01-2119492630-38-xxxx	Benzyl alcohol Acute Tox. 4, H302; Acute Tox. 4, H332 Eye irrit. 2, H319	25-50%
CAS: 2855-13-2 EINECS: 220-666-8 Index number:612-067-00-9 Reg.nr.: 01-2119514687-32-xxxx	3-aminomethyl-3,5,5-trimethylcyclohexylamine Skin Corr. 1B, H314; Acute Tox. 4, H302; Acute Tox.4 H312; Skin Sens. 1, H317; Aquatic Chronic 3, H412	10-25%
CAS: 9046-10-0 Reg.nr.: 01-2119557899-12-xxxx	Polyoxypropylenediamine Skin Corr. 1C, H314; Eye Dam. 1, H318; Aquatic Chronic 3, H412	10-25%
CAS: 69-72-7 EINECS: 200-712-3 Reg.nr.: 01-2119486984-17-xxxx	trimethylhexane-1,6-diamine Skin Corr. 1A, H314; Acute Tox. 4, H302; Skin Sens. 1A, H317	10-25%

4. FIRST AID MEASURES**4.1. Description of First Aid Measures**

General information:	Instantly remove any clothing soiled by the product
Inhalation:	Take affected person into open air and position comfortably Seek medical treatment in case of complaints
Ingestion:	Drink copious amounts of water and provide fresh air. Instantly call for a doctor
Skin contact:	Instantly wash with soap and water and rinse thoroughly

If skin irritation continues, consult a doctor

Eye contact: Rinse opened eye for several minutes under running water, consult a doctor

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available

4.3. Indication of immediate medical attention and special treatment needed

Notes to Doctor: No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5. FIRE-FIGHTING MEASURES

5.1 Extinguishing media

Suitable: CO₂, extinguishing powder or water jet. Fight larger fires with water jet or alcohol resistant foam

Not Suitable: Water with a full water jet

5.2 Special hazards arising from the substance or mixture

Hazards: Formation of toxic gases is possible during heating or in case of fires

5.3 Advice for fire fighters

Special precautions Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. This material is toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Special protective equipment Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Wear essential PPE, locate spill kits, and apply measures to stop leakage as quickly and safely as possible, cordon off area to stop pedestrian access.

6.2 Environmental precautions: Avoid dispersal of spilled material and runoff into soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil, or air). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and material for containment and cleaning up:

Small Spill: Stop leak if without risk. Move containers from spill area. Absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Large Spill: Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements, or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 for contact information and section 13 for waste disposal.

Reference to other sections Clean the accident area carefully

7. HANDLING AND STORAGE

7.1 Precautions for safe handling Put on appropriate personal protective equipment (see section 8). Eating, drinking, smoking should be prohibited in areas where this material is handled, stored, and processed. Workers should wash hands and face before eating, drinking, and smoking. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not ingest. Avoid breathing vapour or mist. Avoid release to the environment. Refer to special instructions/safety data sheet. Keep in the original container or on an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

7.2 Conditions for safe storage, including any incompatibilities Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool, and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination.

Information about storage in one common storage facility: Store away from foodstuffs

Further information about storage conditions: Keep container tightly sealed

7.3 Specific end user(s): No further relevant information available

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

Components with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace

DNELs		
100-51-6 Benzyl alcohol		
Dermal	DNEL -worker	9.5mg/kg / bw/d(-) (langfristig)
Inhalative	DNEL -worker	90 mg/m ³ /(-) (langfristig)

DNELs		
2855-12-2 3-aminomethyl-3,5,5-trimethylcyclohexylamine		
Inhalative	DNEL - worker	1 mg/m ³ (workers)(local effets)

PNEC's	
100-51-6 Benzyl alcohol	
PNEC (predicted no effect concentration)	1 mg/l (Frischwasser (freshwater)) 0.1 mg/l (Meerwasser (seawater))

PNEC's	
9046-10-0 Polyoxypropylenediamine	
PNEC (predicted no effect concentration)	0.015 mg/l (Frischwasser (freshwater)) 0.142 mg/l (Meerwasser (seawater))

PNEC's	
25513-64-8 trimethylhexane-1,6-diamine	
PNEC (predicted no effect concentration)	0.0295 mg/l (Frischwasser (freshwater)) 0.00295 mg/l (Meerwasser (seawater))

PNEC's	
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2855-12-2 3-aminomethyl-3,5,5-trimethylcyclohexylamine

PNEC (predicted no effect concentration)	1 mg/l (Frischwasser (freshwater)) 0.1 mg/l (Meerwasser (seawater))
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8.2 Exposure controls**Recommended monitoring procedures:**

If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to European Standard EN 689 for methods for the assessment of exposure by inhalation to chemical agents and national guidance documents for methods for the determination of hazardous substances.

Occupational exposure controls:

No special ventilation requirements. Good general ventilation should be sufficient to control worker exposure to airborne contaminants. If this product contains ingredients with exposure limits, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits.

Hygiene measures:

Wash hands, forearms, and face thoroughly after handling chemical products, before eating, smoking, and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eye wash stations and safety showers are close to the workstation location

Respiratory Protection:

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Hand protection:

Chemical-resistant, impervious gloves complying with an approved standard should always be worn when handling chemical products if a risk assessment indicates this is necessary.

Eye protection:

Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, or dusts.

Skin protection:

Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls:

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.



Combination filter A-P2



Protective gloves (Nitrile rubber, NBR), for splash protection PVC Gloves

Only use chemical-protective gloves with CE-labelling of category III
Preventive skin protection by use of skin-protecting agents is recommended

Eye protection:



Tightly sealed Safety glasses

Body protection: Protective work clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties.

General information:

Physical state:	Liquid
Colour:	Light Yellow
Odour:	Amine-like
Odour Threshold:	Not determined

Important health, safety and environmental information:

Melting point/Melting range:	Not determined
Initial boiling point and boiling range	>200 °C
Flash Point:	>100 °C
Auto-ignition temperature:	240°C
Flammability:	Product is not selfigniting.
Explosion limits:	Product is not explosive
Critical values for explosion:	
Explosion limits, Upper:	13.0 Vol %
Explosion limits, Lower:	0.7 Vol %
Vapour pressure @ 20°C	0.1 hPa
Density at 23°C	1 g/cm ³ (ISO 2811-2)
Solubility [Water]:	Not miscible or difficult to mix
Partition coefficient n-octanol/water	Not applicable (reacts with water and/or octanol)
Viscosity:	Dynamic @25° C - 200 mPas (ISO 3219)

9.2 Other information

Not applicable

10. STABILITY AND REACTIVITY

10.1 Reactivity:

Stable under normal conditions

10.2 Chemical Stability:

Thermal decomposition / conditions to be avoided:

No decomposition if used according to specifications

10.3 Possibility of hazardous reactions:

Reacts with acids, alkalis and oxidizing agents

10.4 Conditions to avoid:

No further relevant information available

10.5 Incompatible materials:

Strong oxidizing agents

10.6 Hazardous decomposition products:

In the event of fire:

Poisonous gases/vapours

Corrosive gases/vapours

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Toxicity:

LD/LC50 values that are relevant for classification

100-51-6 Benzyl alcohol

Oral	LD50	1040mg/kg (mou)
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Dermal	LD50 LD50	1620 mg/kg (rat) 2000 mg/kg (rbt)
2855-12-2 3-aminomethyl-3,5,5-trimethylcyclohexylamine		
Oral	LD50	1030 mg/kg (rat)
Dermal	LD50	1840 mg/kg (rab) >2000 mg/kg (rat)
9046-10-0 Polyoxypropylenediamine		
Oral	LD50	2885 mg/kg (rat)
Dermal	LD50	2980 mg/kg (rab)
25513-64-8 trimethylhexane-1,6-diamine		
Oral	LD50	910 mg/kg (rat)

Primary irritant effect:

Skin: Caustic effect on skin and mucous membranes
Eyes: Strong caustic effect
Sensitisation: Sensitisation possible by skin contact

Additional toxicological information:

The product shows the following dangers according to the calculation method of the General EC Classification Guidelines for Preparations as issued in the latest version: Harmful, Corrosive, Irritant, Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of oesophagus and stomach

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity:	
100-51-6 Benzyl alcohol	
Algentoxizität (Algae toxicity)	79 mg/l (Scenedesmus quadricauda) (EC50(3h)) 640 mg/l (Alge Scenedesmus sp.) (EC50(96h))
Bakterien-Toxizität (Bacteria toxicity)	>658 mg/l (Pseudomonas putida) (EC50(16h)) 71.42 mg/l (Photobacterium phosphoreum) (EC50(0,5h)) 400 mg/l (Pseudomonas putida) (EC50(0,5h))
Daphnientoxizität (Daphnia toxicity)	400 mg/l (Daphnia magna (Wasserfloh)) (EC50(24h))
Fischtoxizität (Fish toxicity)	460 mg/l (Pimephales promelas) (LC50(96h)) 645 mg/l (Goldorfe (orfe)) (LC50(96h)) 10 mg/l (Lepomis macrochirus) (LC50 (96h))
2855-13-2 3-aminomethyl-3,5,5-trimethylcyclohexylamine	
Algentoxizität (Algae toxicity)	>50 mg/l (Scenedesmus subspicatus) (ErC50(72h))
Bakterien-Toxizität (Bacteria toxicity)	1120 mg/l (Pseudomonas putida) (EC10(18h))
Daphnientoxizität (Daphnia toxicity)	23 mg/l (Daphnia magna (Wasserfloh)) (EC50(48h))
Fischtoxizität (Fish toxicity)	110 mg/l (Leuciscus idus) (LC50(96h))
9046-10-0 Polyoxypropylenediamine	
Bakterientoxizität (Bacteria toxicity) (static)	310 mg/l (Belebtschlamm (activated sludge)) (OECD 209)
Algentoxizität (Algae toxicity)	15 mg/l (Pseudokirchnerilla subcapitata) (EC50(72h))
Daphnientoxizität (Daphnia toxicity)	80 mg/l (Daphnia magna (Wasserfloh)) (EC50(48h))
Fischtoxizität (Fish toxicity)	>15 mg/l (Ochorhyncus mykiss (Regenbogenforelle)) (LC50(96h))
25513-64-8 trimethylhexane-1,6-diamine	
Bakterientoxizität (Bacteria toxicity) (static)	89 mg/l (Pseudomonas putida) (EC50(17h))
Daphnientoxizität (Daphnia toxicity)	31.5 mg/l (Daphnia magna (Wasserfloh)) (EC50(24h))
Algentoxizität (Algae toxicity)	29.5 mg/l (Scenedesmus subspicatus) (EC50(72h))
Fischtoxizität (Fish toxicity)	174 mg/l (Leuciscus idus) (LC50(48h))

12.2 Persistence and degradability

No further relevant information available.

12.3 Bioaccumulative potential

No further relevant information available.

12.4 Mobility in soil

No further relevant information available.

Ecotoxicological effects:

Not determined

Remark:

Harmful to fish

Additional ecological information:

General notes:

Water hazard class 2 (German Regulation) (Self- assessment): hazardous for water. Do not allow product to reach ground water,

water bodies or sewage system. Must not reach sewage water or drainage ditch undiluted or un-neutralised.
 Danger to drinking water if even small quantities leak into soil.

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.
vPvB: Not applicable.

12.6 Other adverse effects:

No further relevant information available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste: For disposal, local regulations issued by the authorities must be observed. Dispose of liquid components at a suitable incineration plant. After curing, the product can be disposed of with household waste.

Soiled packaging: Empty container completely. Keep label(s) on container. The classification of the product may meet the criteria for a hazardous waste. Disposal must be made according to official regulations

European waste catalogue

08 00 00

WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS

08 02 00

Wastes from MFSU of other coatings (including ceramic materials)

08 02 99

Wastes not otherwise specified

14. TRANSPORT INFORMATION

Regulatory information	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es) group	14.4 Packing
ADR	2735	AMINES, LIQUID, CORROSIVE, N.O.S. (Polyoxypropylenediamine)	8 8 (C7)	II II
IMDG	2735	AMINES, LIQUID, CORROSIVE, N.O.S. (Polyoxypropylenediamine)	8 8 (C7)	II II
IATA	2735	AMINES, LIQUID, CORROSIVE, N.O.S. (Polyoxypropylenediamine)	8 8 (C7)	II II
14.5. Environmental Hazards				
Environmentally hazardous and/or marine pollutant:		No		
14.6 Special precautions for user		Warning: Corrosive substances.		
Kemler Number:		80		
EMS Number:		F-A,S-B		
Segregation groups:		Alkalis		
Segregation Code:		SG35 Stow "separated from" acids		
14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code				
		Not applicable.		
Transport/Additional information:				
ADR/RID/ADN				
Excepted quantities (EQ):		E1		
Limited quantities (LQ):		5L		
Excepted quantities (EQ):		Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000ml		
Transport category:		3		
Tunnel restriction code:		E		

IMDG Limited quantities (LQ) Excepted quantities (EQ)	5L Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
UN "Model Regulation":	UN2735, AMINES, LIQUID, CORROSIVE, N.O.S. (POLYOXYPROPYLENEDIAMINE), 8, III

15. REGULATORY INFORMATION

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

Particular provisions: No data available
Water hazard class: Water hazard class 2 (Self-assessment): hazardous for water.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out

16. OTHER INFORMATION

Relevant phrases

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.
H318 - Causes serious eye damage
H319 - Causes serious eye irritation.
H332 - Harmful if inhaled.
H441 - Toxic to aquatic life with long lasting effects
H442 - Harmful to aquatic life with long lasting effects

Abbreviations and acronyms:

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organisation
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration
LD50: Lethal dose, 50 percent
Flam. Liq. 3: Flammable liquids, Hazard Category 3
Acute Tox. 4: Acute toxicity, Hazard Category 4
Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1
Repr. 2: Reproductive toxicity, Hazard Category 2
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3
Aquatic Chronic 3: Hazardous to the aquatic environment - Chronic Hazard, Category 3

The data given here is based on current knowledge and experience. The purpose of this Safety Data is to describe the products in terms of their safety requirements. The data does not signify any warranty with regard to the products' properties.