

SAFETY DATA SHEET

FOR INDUSTRIAL USE ONLY

EPIKURE™ Curing Agent 3223

Section 1. Product and company identification

GHS product identifier : EPIKURE™ Curing Agent 3223

MSDS Number : K8165

Product type : Curing Agent

Manufacturer/Supplier/Importer : Westlake Epoxy Inc.

12650 DIRECTORS DR STE 100

Stafford, Texas 77477

USA

Contact person : epoxyservice@westlake.com

Telephone : For additional health and safety or regulatory information, call

1 888 443 9466.

Emergency telephone number : For Emergency Medical Assistance

Call Health & Safety Information Services

1-866-303-6949

For Emergency Transportation Information

NCEC US Domestic +1 866 928 0789 (toll-free, US only)

NCEC Americas +1 215 207 0061 CANUTEC CA Domestic (613) 996-6666

Section 2. Hazards identification

Classification of the substance or mixture

ACUTE TOXICITY oral - Category 4
ACUTE TOXICITY dermal - Category 4
ACUTE TOXICITY inhalation - Category 2
SKIN CORROSION - Category 1B
SERIOUS EYE DAMAGE - Category 1

SKIN SENSITISATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE

[nervous system] - Category 2

SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE

Respiratory tract irritation - Category 3

GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H302 Harmful if swallowed.

H312 Harmful in contact with skin.

H330 Fatal if inhaled.

H314 Causes severe skin burns and eye damage.

H318 Causes serious eye damage.

H317 May cause an allergic skin reaction.

H371 May cause damage to organs. (nervous system)

H335 May cause respiratory irritation.

Precautionary statements

General : Not applicable.

Prevention: Wear protective gloves, protective clothing and eye or face protection.

In case of inadequate ventilation wear respiratory protection.

Use only outdoors or in a well-ventilated area.

Do not breathe vapor.

Do not eat, drink or smoke when using this product.

Wash thoroughly after handling.

Response : IF exposed or concerned:

Call a POISON CENTER or doctor.

IF INHALED:

Remove person to fresh air and keep comfortable for breathing.

Immediately call a POISON CENTER or doctor.

IF SWALLOWED:

Immediately call a POISON CENTER or doctor.

Rinse mouth. Do NOT induce vomiting.

IF ON SKIN (or hair):

Take off immediately all contaminated clothing. Rinse skin with water.

Immediately call a POISON CENTER or doctor.

Wash contaminated clothing before reuse.

IF ON SKIN:

Call a POISON CENTER or doctor if you feel unwell.

Wash with plenty of water. If skin irritation or rash occurs: Get medical advice or attention.

IF IN EYES:

Rinse cautiously with water for several minutes. Remove contact

lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage : Store locked up.

Store in a well-ventilated place. Keep container tightly closed.

Disposal : Dispose of contents and container in accordance with all local,

regional, national and international regulations.

Other hazards which do not result

in classification

None known.

Section 3. Composition/information on ingredients

Substance/mixture : Substance

CAS number/other identifiers

CAS number : Not available EC number : Not available

Ingredient name	% by weight	CAS
		number
Diethylenetriamine	100	111-40-0

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

Description of necessary first aid measures

Eye contact

: Get medical attention immediately. Call a poison center or physician.

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses.

Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.

: Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

: Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Edit medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to

Inhalation

Skin contact

Ingestion

Version:

8.0

an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to physician

In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

Specific treatments

Protection of first aid personnel

No specific treatment.

No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

Extinguishing media

fire-fighters

Suitable extinguishing media Unsuitable extinguishing media : Use dry chemical, CO2, alcohol-resistant foam or water spray (fog).

Do not use water jet.

Specific hazards arising from the chemical

Hazardous thermal decomposition products

: In a fire or if heated, a pressure increase will occur and the container may burst.

 Decomposition products may include the following materials: carbon dioxide carbon monoxide nitrogen oxides

Special protective actions for fire-fighters

Special protective equipment for

: Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

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

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

: No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders

: If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Small spill

Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, 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 of SDS). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see section 1 of SDS for emergency contact information and section 13 of SDS for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures

: Put on appropriate personal protective equipment (see section 8 of SDS). 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 breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or 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.

Advice on general occupational hygiene

Eating, drinking and 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. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

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 of SDS) and food and drink. Store locked up. 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 unlabeled containers. Use appropriate containment to avoid environmental contamination.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Exposure limits
NIOSH REL (1994-06-01) TWA - TLV and PEL 4 mg/m3 1 ppm
Notes: Absorbed through skin.
ACGIH TLV (1994-09-01)
TWA 4.2 mg/m3 1 ppm
Notes: Absorbed through skin.
OSHA PEL 1989 (1989-03-01)
TWA 4 mg/m3 1 ppm

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 appropriate monitoring standards. Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Appropriate engineering controls

Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Individual protection measures

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. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Eye/face 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, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.

Skin protection

Hand protection

: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that

the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves

cannot be accurately estimated.

Personal protective equipment for the body should be selected based **Body protection**

on the task being performed and the risks involved and should be

approved by a specialist before handling this product.

Other skin protection Appropriate footwear and any additional skin protection measures

should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this

Respiratory protection Based on the hazard and potential for exposure, select a respirator that

meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper

fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties

Appearance

Physical state Liquid

Color Colorless/Colourless

Odor amine.

Odor threshold Not available Not available

Melting point/ Freezing point Not available **Boiling point** 199 °C (390 °F)

Flash point Pensky-Martens Closed Cup: 101.67 °C (215.01 °F) (ASTM D 93)

Burning time Not available Not available **Burning** rate

Evaporation rate 1 ((n-Butyl acetate=1))

Flammability (solid, gas) Not available Lower and upper explosive **Lower:** 1.9 %(V)

(flammable) limits **Upper:** 11.9 %(V)

Less than 1.33 mbar @ 20 °C (68 °F) Vapor pressure

Vapor density Greater than 1 [Air = 1]

Relative density 0.95

Solubility Not available Solubility in water Complete

Partition coefficient: n-Not available

octanol/water

Auto-ignition temperature Not available **Decomposition** temperature Not available **SADT** Not available

Dynamic: Not available Viscosity

Kinematic: Not available

Other information

No additional information.

Section 10. Stability and reactivity

Reactivity : Stable under normal conditions.

Chemical stability : The product is stable.

Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will

not occur.

Conditions to avoid : No specific data.

Incompatible materials : No specific data.

Hazardous decomposition products: Under normal conditions of storage and use, hazardous decomposition

products should not be produced.

Other hazards Reacts with considerable heat release with some curing agents.

Heating this substance above 300 deg. F in the presence of air may cause slow oxidative decomposition; above 500 deg. F polymerization

may occur.

Some combinations of resins and curing agents can produce exothermic reactions which in large masses can cause runaway

polymerization and charring of the reactants

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure	
Diethylenetriamine	Diethylenetriamine				
	LD50 Oral	Rat	1,080 mg/kg	-	
	LD50 Oral	Rat	1,080 mg/kg	-	
Remarks - Inhalation:	No applicable toxic	city data.			
	LD50 Dermal	Rabbit	1,090 mg/kg	-	
	LD50 Dermal	Rabbit	1,054 mg/kg	-	

Conclusion/Summary : Not available

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Diethylenetriamine	Skin -	Rabbit			-
	Moderate irritant				

Conclusion/Summary

Skin : Not available eyes : Not available

Respiratory : Not available

Sensitization

Conclusion/Summary

Skin : Not available
Respiratory : Not available

Mutagenicity

Conclusion/Summary : Not available

Carcinogenicity

Conclusion/Summary : Not available

Reproductive toxicity

Conclusion/Summary : Not available

Teratogenicity

Conclusion/Summary : Not available

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
1,2-Ethanediamine, N1-(2-	Category 2	=	nervous system
aminoethyl)-			
	Category 3	-	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Not available

Aspiration hazard

Not available

Information on likely routes of

exposure

Not available

Potential acute health effects

Eye contact : Causes serious eye damage.

Inhalation : Fatal if inhaled. May cause damage to organs following a single

exposure if inhaled. May cause respiratory irritation.

Skin contact : Causes severe burns. Harmful in contact with skin. May cause an

allergic skin reaction.

Ingestion: Harmful if swallowed. May cause damage to organs following a single

exposure if swallowed.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:

pain watering

redness

Inhalation : Adverse symptoms may include the following:

respiratory tract irritation

coughing

Skin contact : Adverse symptoms may include the following:

pain or irritation

redness

blistering may occur

Ingestion : Adverse symptoms may include the following:

stomach pains

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

Short term exposure

Potential immediate effects : Not available
Potential delayed effects : Not available

Long term exposure

Potential immediate effects : Not available
Potential delayed effects : Not available

Potential chronic health effects

Conclusion/Summary : Not available

General : Once sensitized, a severe allergic reaction may occur when

subsequently exposed to very low levels.

Carcinogenicity: No known significant effects or critical hazards.Mutagenicity: No known significant effects or critical hazards.Teratogenicity: No known significant effects or critical hazards.Developmental effects: No known significant effects or critical hazards.Fertility effects: No known significant effects or critical hazards.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral	Dermal	Inhalation (gases)	Inhalation (vapors)	Inhalation (dusts and mists)
EPIKURE™ Curing Agent 3223	1,080 mg/kg	1,054 mg/kg	N/A	N/A	0.05 mg/l
1,2-Ethanediamine, N1-(2-aminoethyl)-	1,080 mg/kg	1,054 mg/kg	N/A	N/A	0.05 mg/l

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
2,2'-iminodiethylamine			

Remarks - Acute - Fish:	No applicable toxicity data.		
	Acute LC50 16 mg/l	Aquatic invertebrates. Daphnia	48 h
	Acute LC50 53,500 μg/l Fresh water	Aquatic invertebrates. Daphnia	48 h
	Acute LC50 16 mg/l	Aquatic invertebrates. Daphnia	48 h
Remarks - Acute - Aquatic invertebrates.:	Acute		
	Acute EC50 1,164 mg/l	Aquatic plants - Green algae	72 h
	Acute EC50 345,600 µg/l Fresh water	Aquatic plants - Algae	96 h
	Acute EC50 345.6 mg/l Fresh water	Aquatic plants - Algae	96 h
Remarks - Acute - Aquatic plants:	Acute		
Remarks - Chronic - Fish:	No applicable toxicity data.		
Remarks - Chronic - Aquatic	No applicable toxicity data.		
invertebrates.:			

Conclusion/Summary : Not available

Persistence/degradability

Conclusion/Summary : Not available

Bioaccumulative potential

Product/ingredient name	LogPow	BCF	Potential
2,2'-iminodiethylamine	-5.58	0.65 2.80 - 6.30	low

Mobility in soil

Soil/water partition coefficient

(KOC)

Other adverse effects

Not available

No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods

The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

The data provided in this section is for information only and may not be specific to your package size or mode of transport. You will need to apply the appropriate regulations to properly classify your shipment for transportation.

International transport regulations

Regulatory information	UN/NA number	Proper shipping name	Classes/*PG	Reportable Quantity (RQ)
CFR	2079	DIETHYLENETRIAMINE	Class 8 II	
TDG	2079	DIETHYLENETRIAMINE	Class 8 II	
IMO/IMDG	2079	DIETHYLENETRIAMINE	Class 8 II	

*PG: Packing group

Special precautions for user

: Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Section 15. Regulatory information

United States

U.S. Federal regulations

United States - TSCA 12(b) - Chemical export notification: None required.

United States - TSCA $5\alpha 2$ - Final significant new use rules: Not listed United States - TSCA $5\alpha 2$ - Proposed significant new use rules: Not listed

United States - TSCA 5(e) - Substances consent order: Not listed SARA 311/312 Classification - ACUTE TOXICITY, oral, Category 4 SARA 311/312 Classification - ACUTE TOXICITY, dermal, Category 4 SARA 311/312 Classification - ACUTE TOXICITY, inhalation, Category 2

SARA 311/312 Classification - SKIN CORROSION, Category 1B
SARA 311/312 Classification - SERIOUS EYE DAMAGE, Category 1
SARA 311/312 Classification - SKIN SENSITISATION, Category 1
SARA 311/312 Classification - SPECIFIC TARGET ORGAN TOXICITY
- SINGLE EXPOSURE, nervous system, Category 2

SARA 311/312 Classification - SPECIFIC TARGET ORGAN TOXICITY - SINGLE EXPOSURE, Respiratory tract irritation, Category 3

SARA 311/312 Classification - Not applicable

California Prop. 65:

This product does not require a Safe Harbor warning under California Prop. 65.

United States inventory (TSCA : All components are active or exempted.

8b)

International regulations

International lists

: Australia inventory (AIIC): All components are listed or exempted.

Canada inventory: All components are listed or exempted. **Japan inventory:** All components are listed or exempted.

China inventory (IECSC): All components are listed or exempted. Korea inventory (KECI): All components are listed or exempted.

New Zealand Inventory (NZIoC): All components are listed or exempted.

Philippines inventory (PICCS): All components are listed or exempted.

United States inventory (TSCA 8b): All components are active or exempted.

Taiwan inventory (TCSI): All components are listed or exempted.

Section 16. Other information

Hazardous Material Information System III (U.S.A.):

Health	*	3
Flammability		1
Physical hazards		0

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material. For more information on HMIS® Personal Protective Equipment (PPE) codes, consult the HMIS® Implementation Manual.

Full text of abbreviated H : Not applicable.

statements

History

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Prepared by

Key to abbreviations

: Product Safety Stewardship

ATE = Acute Toxicity Estimate

BCF = Bioconcentration Factor

GHS = Globally Harmonized System of Classification and Labelling of Chemicals

IATA = International Air Transport Association IBC = Intermediate Bulk Container

IMDG= International Maritime Dangerous Goods

LogPow = logarithm of the octanol/water partition coefficient

MARPOL = International Convention for the Prevention of Pollution From Ships, 1973

as modified by the Protocol of 1978. ("Marpol" = marine pollution)

RID = The Regulations concerning the International Carriage of Dangerous Goods by

Rail

UN = United Nations

References : Not available

Notice to reader

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.