

SAFETY DATA SHEET

According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

CHINA
AMINES

MONOETHANOLAMINE (MEA)

Version 2.4 Revision Date: 04.11.2022 GB / EN Date of last issue: 04.05.2021
Date of first issue: 20.12.2012

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : MONOETHANOLAMINE (MEA)
EC-No. : 205-483-3

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

Use of the Substance/Mixture : Chemical intermediate

1.3 Details of the supplier of the safety data sheet

Company :China Amines Co., Ltd
UNIT 1021, BEVERLEY COMMERCIAL CENTRE, 87-105CHATHAM
ROAD SOUTH, TSIM SHA TSUI, KOWLOON HONG KONG

Telephone +86 18938922889

E-mail address of person
responsible for the SDS

1.4 Emergency telephone number

Emergency telephone : +86 18938922889

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Acute toxicity, Category 4 H302: Harmful if swallowed.
Acute toxicity, Category 4 H332: Harmful if inhaled.
Acute toxicity, Category 4 H312: Harmful in contact with skin.

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Skin corrosion, Sub-category 1B	H314: Causes severe skin burns and eye damage.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Specific target organ toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.
Long-term (chronic) aquatic hazard, Category 3	H412: Harmful to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Hazard pictograms	:	
Signal word	:	Danger
Hazard statements	:	H302 + H312 + H332 Harmful if swallowed, in contact with skin or if inhaled. H314 Causes severe skin burns and eye damage. H335 May cause respiratory irritation. H412 Harmful to aquatic life with long lasting effects.
Precautionary statements	:	Prevention: P261 Avoid breathing mist or vapours. P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection. Response: P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. P305 + P351 + P338 + P310 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/ doctor.

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2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name : MONOETHANOLAMINE (MEA)

EC-No. : 205-483-3

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
Ethanolamine	141-43-5 205-483-3	>= 90 - <= 100

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Immediate medical attention is required.
Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
- If inhaled : If breathed in, move person into fresh air.
Consult a physician after significant exposure.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Rinse immediately with plenty of water.
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
If skin irritation persists, call a physician.
- In case of eye contact : Rinse with plenty of water.
Get medical attention immediately. Continue to rinse during transport.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
Small amounts splashed into eyes can cause irreversible tissue damage and blindness.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.

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Never give anything by mouth to an unconscious person.
Take victim immediately to hospital.
Do not induce vomiting! May cause chemical burns in mouth
and throat.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : The symptoms and effects are as expected from the hazards
as shown in section 2. No specific product related symptoms
are known.
- Risks : Harmful if swallowed, in contact with skin or if inhaled.
Causes serious eye damage.
May cause respiratory irritation.
Causes severe burns.

4.3 Indication of any immediate medical attention and special treatment needed

- Treatment : Treat symptomatically.
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SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or
carbon dioxide.

5.2 Special hazards arising from the substance or mixture

- Specific hazards during firefighting : Water spray may be ineffective unless used by experienced
firefighters.
Do not allow run-off from fire fighting to enter drains or water
courses.
- Hazardous combustion products : Carbon oxides
Nitrogen oxides (NOx)

5.3 Advice for firefighters

- Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
- Further information : Collect contaminated fire extinguishing water separately. This
must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must
be disposed of in accordance with local regulations.
For safety reasons in case of fire, cans should be stored
separately in closed containments.

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Wear respiratory protection.
Ensure adequate ventilation.
Evacuate personnel to safe areas.
Only qualified personnel equipped with suitable protective equipment may intervene.
Prevent unauthorised persons entering the zone.

6.2 Environmental precautions

Environmental precautions : Try to prevent the material from entering drains or water courses.
Discharge into the environment must be avoided.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

6.4 Reference to other sections

For disposal considerations see section 13.
For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : For personal protection see section 8.
Avoid formation of aerosol.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
Dispose of rinse water in accordance with local and national regulations.

Advice on protection against fire and explosion : Avoid formation of aerosol. Keep away from sources of ignition - No smoking. No sparking tools should be used. Take measures to prevent the build up of electrostatic charge.

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Hygiene measures : Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : No smoking. Keep in a well-ventilated place. Reacts with copper, aluminium, zinc and their alloys.

Further information on storage stability : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s) : Refer to attached exposure scenario Annex.

Intermediate

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Ethanolamine	141-43-5	TWA	1 ppm 2.5 mg/m ³	GB EH40
	Further information: Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		STEL	3 ppm 7.6 mg/m ³	GB EH40
	Further information: Can be absorbed through the skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		TWA	1 ppm 2.5 mg/m ³	2006/15/EC
	Further information: Indicative, Identifies the possibility of significant uptake through the skin			
		STEL	3 ppm 7.6 mg/m ³	2006/15/EC
	Further information: Indicative, Identifies the possibility of significant uptake through the skin			

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8.2 Exposure controls

Engineering measures

Effective exhaust ventilation system
Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye/face protection : Safety glasses with side-shields conforming to EN166

Hand protection

Material : butyl-rubber
Break through time : > 30 min
Glove thickness : ≥ 0.2 mm
Directive : Protective gloves complying with EN 374.
Wearing time : < 30 min

Material : butyl-rubber
Break through time : > 240 min
Glove thickness : ≥ 0.6 mm
Directive : Protective gloves complying with EN 374.
Wearing time : < 240 min

Material : butyl-rubber
Break through time : > 480 min
Glove thickness : ≥ 0.8 mm
Directive : Protective gloves complying with EN 374.
Wearing time : < 480 min

Remarks : The data about break through time/strength of material are standard values! The exact break through time/strength of material has to be obtained from the producer of the protective glove.

Skin and body protection : Protective suit

Respiratory protection : In the case of vapour or aerosol formation use a respirator with an approved filter.
Wear full face mask supplied with:
Gas cartridge K (ammonia, green).

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : Clear liquid

Colour : colourless

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Odour	:	amine-like
Odour Threshold	:	No data available
pH	:	12.1 (20 °C) Concentration: 100 g/l
Melting point/freezing point	:	4 °C (1,013 hPa)
Boiling point/boiling range	:	167 °C (1,013 hPa)
Flash point	:	92.5 °C Method: ISO 2719
Evaporation rate	:	No data available
Flammability (solid, gas)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	27.0 %(V) (133.8 °C)
Lower explosion limit / Lower flammability limit	:	3.4 %(V) (88.3 °C)
Vapour pressure	:	0.5 hPa (20 °C)
Relative vapour density	:	2.1
Relative density	:	1.016 (20 °C)
Density	:	1.016 g/cm ³ (20 °C) 1 g/cm ³ (40 °C)
Solubility(ies)	:	
Water solubility	:	completely miscible
Solubility in other solvents	:	Description: Soluble in ethanol and acetone.
Partition coefficient: n-octanol/water	:	log Pow: -2.3 (25 °C)
Auto-ignition temperature	:	424 °C (1,013 hPa)

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Decomposition temperature	:	No data available
Viscosity		
Viscosity, dynamic	:	23.18 mPa.s (20 °C)
Viscosity, kinematic	:	23.55 mm ² /s (20 °C)
Explosive properties	:	Not explosive
Oxidizing properties	:	The substance or mixture is not classified as oxidizing.

9.2 Other information

Flammability (liquids)	:	Product is combustible at high temperatures.
Molecular weight	:	61.08 g/mol

SECTION 10: Stability and reactivity

10.1 Reactivity

Stable under normal conditions.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions	:	Heating can release hazardous gases.
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10.4 Conditions to avoid

Conditions to avoid	:	Heat, flames and sparks.
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10.5 Incompatible materials

Materials to avoid	:	Reacts with copper, aluminium, zinc and their alloys. Strong acids and oxidizing agents Halogenated compounds
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10.6 Hazardous decomposition products

Nitrogen oxides (NO _x)		
Thermal decomposition	:	No data available

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Harmful if swallowed, in contact with skin or if inhaled.

Components:

Ethanolamine:

- | | | |
|---------------------------|---|--|
| Acute oral toxicity | : | LD50 (Rat, male and female): 1,089 mg/kg
Method: OECD Test Guideline 401
Remarks: Information taken from reference works and the literature. |
| Acute inhalation toxicity | : | LC50: 20 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Acute toxicity estimate |
| Acute dermal toxicity | : | LD50: 2,000 mg/kg
Method: Acute toxicity estimate |

Skin corrosion/irritation

Causes severe burns.

Components:

Ethanolamine:

- | | | |
|---------|---|--|
| Species | : | Rabbit |
| Method | : | OECD Test Guideline 404 |
| Result | : | Causes burns. |
| Remarks | : | Information taken from reference works and the literature. |

Serious eye damage/eye irritation

Causes serious eye damage.

Components:

Ethanolamine:

- | | | |
|---------|---|--|
| Species | : | Rabbit |
| Method | : | OECD Test Guideline 405 |
| Result | : | Risk of serious damage to eyes. |
| Remarks | : | Information taken from reference works and the literature. |

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Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Components:

Ethanolamine:

Test Type	:	Maximisation Test
Species	:	Guinea pig
Result	:	Does not cause skin sensitisation.
Remarks	:	Information taken from reference works and the literature.

Germ cell mutagenicity

Not classified based on available information.

Components:

Ethanolamine:

Genotoxicity in vitro	:	Test Type: Ames test Test system: Salmonella typhimurium Metabolic activation: with and without metabolic activation Method: OECD Test Guideline 471 Result: negative Remarks: Information taken from reference works and the literature.
Genotoxicity in vivo	:	Species: Mouse (male and female) Cell type: Bone marrow Application Route: Oral Method: Mutagenicity (micronucleus test) Result: negative GLP: yes Remarks: Information taken from reference works and the literature.

Carcinogenicity

Not classified based on available information.

Reproductive toxicity

Not classified based on available information.

STOT - single exposure

May cause respiratory irritation.

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Components:

Ethanolamine:

Assessment : May cause respiratory irritation.

STOT - repeated exposure

Not classified based on available information.

Components:

Ethanolamine:

Assessment : Not classified due to data which are conclusive although insufficient for classification.

Aspiration toxicity

Not classified based on available information.

Components:

Ethanolamine:

Not classified due to data which are conclusive although insufficient for classification.

Further information

Product:

Remarks : No further data available.

SECTION 12: Ecological information

12.1 Toxicity

Components:

Ethanolamine:

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 349 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: Tested according to Directive 92/69/EEC.
GLP: yes
Remarks: Information taken from reference works and the literature.

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 27.04 mg/l
aquatic invertebrates : Exposure time: 48 h
Test Type: Immobilization
Method: OECD Test Guideline 202

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Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 2.8 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201
Remarks: Information taken from reference works and the literature.

Toxicity to fish (Chronic toxicity) : NOEC: 1.2 mg/l
Exposure time: 30 d
Species: Oryzias latipes (Orange-red killifish)
Method: OECD Test Guideline 210
Remarks: Information taken from reference works and the literature.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.85 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 202
Remarks: Information taken from reference works and the literature.

12.2 Persistence and degradability

Product:

Biodegradability : Result: Readily biodegradable.

Biochemical Oxygen Demand (BOD) : Remarks: No data available

Components:

Ethanolamine:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301E

Biochemical Oxygen Demand (BOD) : 800 mg/g
Incubation time: 5 d

12.3 Bioaccumulative potential

Product:

Bioaccumulation : Remarks: Not expected considering the low log Pow value.

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Components:

Ethanolamine:

Bioaccumulation : Remarks: Not expected considering the low log Pow value.

Partition coefficient: n-octanol/water : log Pow: -2.3 (25 °C)

12.4 Mobility in soil

Product:

Mobility : Remarks: Adsorption to the solid soil particles is not expected., Transport to air is not expected.

Components:

Ethanolamine:

Mobility : Remarks: Mobile in soils, Transport to air is not expected.

12.5 Results of PBT and vPvB assessment

Components:

Ethanolamine:

Assessment : This substance is not considered to be a PBT (Persistent, Bioaccumulation, Toxic). This substance is not considered to be vPvB (very Persistent nor very Bioaccumulating)

12.6 Other adverse effects

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Dispose of contents/container in accordance with local regulation.

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Contaminated packaging : Empty remaining contents.
Dispose of as unused product.

SECTION 14: Transport information

14.1 UN number

ADR : UN 2491
RID : UN 2491
IMDG : UN 2491
IATA : UN 2491

14.2 UN proper shipping name

ADR : ETHANOLAMINE
RID : ETHANOLAMINE
IMDG : ETHANOLAMINE
IATA : Ethanolamine

14.3 Transport hazard class(es)

ADR : 8
RID : 8
IMDG : 8
IATA : 8

14.4 Packing group

ADR
Packing group : III
Classification Code : C7
Hazard Identification Number : 80
Labels : 8
Tunnel restriction code : (E)

RID
Packing group : III
Classification Code : C7
Hazard Identification Number : 80
Labels : 8

IMDG
Packing group : III
Labels : 8
EmS Code : F-A, S-B

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IATA (Cargo)

Packing instruction (cargo aircraft) : 856
Packing instruction (LQ) : Y841
Packing group : III
Labels : Corrosives

IATA_P (Passenger)

Packing instruction (passenger aircraft) : 852
Packing instruction (LQ) : Y841
Packing group : III
Labels : Corrosives

14.5 Environmental hazards

ADR

Environmentally hazardous : no

RID

Environmentally hazardous : no

IMDG

Marine pollutant : no

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17) : Conditions of restriction for the following entries should be considered:
Number on list 3

UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation : Not applicable

The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain) : Not applicable

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Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

UK REACH List of substances subject to authorisation (Annex XIV) : Not applicable

GB Export and import of hazardous chemicals - Prior Informed Consent (PIC) Regulation : Not applicable

Control of Major Accident Hazards Regulations 2015 (COMAH) : Not applicable

The components of this product are reported in the following inventories:

TCSI : On the inventory, or in compliance with the inventory

TSCA : All substances listed as active on the TSCA inventory

AIIC : On the inventory, or in compliance with the inventory

DSL : All components of this product are on the Canadian DSL

ENCS : On the inventory, or in compliance with the inventory

ISHL : On the inventory, or in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : On the inventory, or in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

NZIoC : Not in compliance with the inventory

TECI : On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment

Ethanolamine : A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: Other information

Full text of other abbreviations

2006/15/EC : Europe. Indicative occupational exposure limit values
GB EH40 : UK. EH40 WEL - Workplace Exposure Limits

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2006/15/EC / TWA	:	Limit Value - eight hours
2006/15/EC / STEL	:	Short term exposure limit
GB EH40 / TWA	:	Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL	:	Short-term exposure limit (15-minute reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; TECl - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

Further information

This safety datasheet only contains information relating to safety and does not replace any product information or product specification.

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

SAFETY DATA SHEET

According to REACH Regulation (EC) No 1907/2006, as amended by
UK REACH Regulations SI 2019/758

MONOETHANOLAMINE (MEA)

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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.

GB / EN