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-----ISO 9001: 2015-----

MATERIAL SAFETY DATA SHEET

1. Identification

1.1 GHS Product identifier

Triethanolamine, 98%

Code T 2075

2. Hazard identification

2.1 Classification of the substance or mixture

Not classified.

2.2 GHS label elements, including precautionary statements

Pictogram(s) No symbol.
Signal word No signal word.
Hazard statement(s) none
Precautionary statement(s) none

Prevention none

Response none

Storage none

Disposal none

2.3 Other hazards which do not result in classification

none

3. Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
Triethanolamine	Triethanolamine	102-71-6	none	100%

4. First-aid measures

4.1 Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

Fresh air, rest.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

If swallowed

Give one or two glasses of water to drink.

4.2 Most important symptoms/effects, acute and delayed

Liquid may irritate eyes and skin. (USCG, 1999)

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

/SRP:/ Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand-valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR as necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Organic bases/amines and related compounds/

5. Fire-fighting measures

5.1 Extinguishing media

Suitable extinguishing media

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

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Poisonous gases, such as NOx, may be produced (USCG, 1999)

5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

6.2 Environmental precautions

Collect leaking and spilled liquid in covered containers as far as possible. Then wash away with plenty of water.

6.3 Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Avoid breathing vapors, mist or gas. Environmental precautions: Do not let product enter drains. Methods and materials for containment and cleaning up: Keep in suitable, closed containers for disposal.

7. Handling and storage

7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

7.2 Conditions for safe storage, including any incompatibilities

Separated from oxidants. Well closed. Dry. Keep container tightly closed in a dry and well-ventilated place. Hygroscopic.

8. Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

no data available

Biological limit values

no data available

8.2 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

9. Physical and chemical properties

Physical state

Colorless to light yellow, viscous liquid

Colour

Viscous liquid

Odour

Slight ammoniacal odor

Melting point/ freezing point

21\°C

Boiling point or initial boiling point and boiling range

190-193\°C/5mmHg(lit.)

Flammability

Combustible. Gives off irritating or toxic fumes (or gases) in a fire.

Lower and upper explosion limit / flammability limit

no data available

Flash point

179\°C

Auto-ignition temperature

315.56\°C

Decomposition temperature

no data available

pH

pH = 10.5 (0.1 N aqueous solution); strong base

Kinematic viscosity

590.5 cP at 25\°C; 65.7 cP at 60\°C

Solubility

In water: soluble

Partition coefficient n-octanol/water (log value)

log Kow = -1.00

Vapour pressure

0.01 mm Hg (20 \°C)

Density and/or relative density

1.124g/ml at 25\°C(lit.)

Relative vapour density

5.14 (vs air)

Particle characteristics

no data available

10. Stability and reactivity

10.1 Reactivity

no data available

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Fire hazard: Combustible liquid when exposed to heat or flame. TRIETHANOLAMINE is an aminoalcohol. Neutralize acids to form salts plus water in exothermic reactions. Amines may be incompatible with isocyanates, halogenated organics, peroxides, phenols (acidic), epoxides, anhydrides, and acid halides. Flammable gaseous hydrogen is generated in combination with strong reducing agents, such as hydrides. Reacts violently with strong oxidants. [Handling Chemicals Safely 1980. p. 928].

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Incompatible materials: Acids, oxidizing agents.

10.6 Hazardous decomposition products

Hazardous decomposition products formed under fire conditions - Carbon oxides, nitrogen oxides (NOx).

11. Toxicological information

Acute toxicity

Oral: LD50 Mice oral 7400 mg/kg

Inhalation: no data available

Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

Evaluation: There is inadequate evidence in humans for the carcinogenicity of triethanolamine. There is inadequate evidence in experimental animals for the carcinogenicity of triethanolamine. Overall evaluation: Triethanolamine is not classifiable as to its carcinogenicity to humans (Group 3).

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

12. Ecological information

12.1 Toxicity

Toxicity to fish: LC50; Species: *Pimephales promelas* (fathead minnow); Conditions: flow-through bioassay with measured concentrations, 25.7 mg/L, dissolved oxygen 7.3 g/L, and pH 7.8; Concentration: 11.8 g/L for 96 hr (95% confidence limit 10.6-13.0 g/L)

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: EC50; Species: *Scenedesmus subspicatus* (Green algae); Conditions: tested in the *Scenedesmus* cell multiplication inhibition test, static; Concentration: 470,000 µg/L for 48 hr; Effect: decreased biomass

Toxicity to microorganisms: no data available

12.2 Persistence and degradability

AEROBIC: Triethanolamine, present at 50 ppm, was biodegraded 70% ThOD (theoretical oxygen demand) in 10 days in a river die-away test using acclimated Kanawha River water as seed and sewage as inoculum(1). In a BOD test in water using a sewage inoculum, triethanolamine added at an initial concentration 2.5 ppm and run for 5, 10, 15 and 20 days exhibited 0, 0.8, 3.5 and 6.8% ThOD, respectively(2). Another BOD test in water using sewage inoculum incubated for 20 days resulted in 66% ThOD for triethanolamine(3). Using synthetic sea water and sewage inoculum, a 20 day run showed 69% ThOD for triethanolamine(3). Using effluent from a biological sanitary waste treatment plant as an inoculum, triethanolamine degradation was 5% ThOD (unadapted) and 28% ThOD (adapted) in a 5 day test(4). Triethanolamine, present at 500 ppm, added to BOD water with an activated sludge inoculum and acclimated for 15 days resulted in 22% ThOD after a 10 day test period(5).

12.3 Bioaccumulative potential

BCFs of <0.4 and <3.9 were reported using carp (*Cyprinus carpio*) which were exposed to respective concentrations of 2.5 and 25 ppm of triethanolamine over a 6-week period(1). According to a classification scheme(2), these BCFs suggest bioconcentration in aquatic organisms is low.

12.4 Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc of triethanolamine can be estimated to be 10(SRC). According to a classification scheme(2), this estimated Koc value suggests that triethanolamine is expected to have very high mobility in soil. The pKa of triethanolamine is 7.76(3), indicating that this compound will partially exist in cation form in the environment and cations generally adsorb more strongly to soils containing organic carbon and clay than their neutral counterparts(4).

12.5 Other adverse effects

no data available

13. Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14. Transport information

14.1 UN Number

ADR/RID: Not dangerous goods.

IMDG: Not dangerous goods.

IATA: Not dangerous goods.

14.2 UN Proper Shipping Name

ADR/RID: unknown

IMDG: unknown

IATA: unknown

14.3 Transport hazard class(es)

ADR/RID: Not dangerous goods.

IMDG: Not dangerous goods.

IATA: Not dangerous goods.

14.4 Packing group, if applicable

ADR/RID: Not dangerous goods.

IMDG: Not dangerous goods.

IATA: Not dangerous goods.

14.5 Environmental hazards

ADR/RID: no

IMDG: no

IATA: no

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

15. Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
Triethanolamine	Triethanolamine	102-71-6	none
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.

Section 16: Other Information

This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.