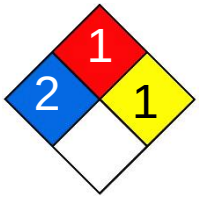
Material Safety Data Sheets



Revision 3

1. IDENTIFICATION

Product Name	**Triethanolamine**
Other Names	Tris(2-hydroxyethyl)amine; 2,2',2"-Trihydroxytriethylamine; TEA, TEA
Uses	Other non-specified industry: Analytical reagent.
Chemical Family	No Data Available
Chemical Formula	C6H15NO3
Chemical Name	Triethanolamine 99%,
Product Description	No Data Available
Company	**Arman sina.co**
Contact Information	info@armansina.com **www.armansina.com**

2. HAZARD IDENTIFICATION

Hazard Categories

CAUSES SEVERE EYE IRRITATION.
CAUSES SKIN IRRITATION.
MAY BE HARMFUL IF SWALLOWED.
MAY CAUSE RESPIRATORY TRACT IRRITATION.

Signal Word

WARNING

Hazard Statements

May Cause Eye, Skin and Respiratory Tract irritation.
COMBUSTIBLE MATERIAL AND VAPOR.
MAY CAUSE ALLERGIC SKIN REACTION.
CAUSES EYE IRRITATION.

Precautionary Statements

Prevention

Do not ingest.
Do not get in eyes or on skin or clothing. Avoid breathing vapor or mist.
Use only with adequate ventilation.
Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling

Response

Keep container tightly closed and sealed until ready for use. Wash thoroughly after handling

symbol

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Triethanolamine	C6H15NO3	102-71-6	>=95

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Get medical advice/attention if you feel unwell.

Eye IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention (preferably an ophthalmologist).

Skin IF ON SKIN (or hair): Immediately wash skin and hair with plenty of soap and running water, while removing contaminated clothing and shoes. If skin irritation occurs, get medical advice/attention. Wash contaminated clothing and shoes before reuse. Discard items which cannot be decontaminated, including leather articles such as shoes, belts and watchbands.
*If burn is present, treat as any thermal burn, after decontamination.

Inhaled IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention.

Advice to Doctor For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. First Aid responders should pay attention to self-protection and use the recommended protective clothing (see SECTION 8).
*Most important symptoms and effects, both acute and delayed: Repeated exposure may cause irritation, even a burn. May cause slight eye irritation.

Medical Conditions Aggravated by Exposure **Skin contact may cause an allergic skin reaction in a small proportion of individuals.**

5. FIRE FIGHTING MEASURES

General Measures Keep people away. Isolate fire and deny unnecessary entry. Move container from fire area if this is possible without hazard. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed. Fight fire from protected location or safe distance. Consider the use of unmanned hose holders or monitor nozzles. Immediately withdraw all personnel from the area in case of rising sound from venting safety device or discoloration of the container. Burning liquids may be moved by flushing with water to protect personnel and minimise property damage.

Flammability Conditions May burn but does not ignite readily.
*Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures, possibly resulting in spontaneous combustion.

Extinguishing Media Use dry chemical, Carbon dioxide (CO2), foam, water spray or fog for extinction. Do not use direct water stream - May spread fire.
*Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.

Fire and Explosion Hazard	Container may rupture from gas generation in a fire situation. Violent steam generation or eruption may occur upon application of direct water stream to hot liquids.
Hazardous Products of Combustion	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include Carbon oxides, Nitrogen oxides (NOx).
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	179 ° C [Closed cup]
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. ELIMINATE all ignition sources. Do not touch or walk through spilled material. Avoid breathing vapours and contact with eyes, skin and clothing.
Clean Up Procedures	Pump (large spills) into suitable and properly labelled containers. Recover spilled material if possible. Absorb (small spills) with sand or other non-combustible absorbent material and place into containers for later disposal (see SECTION 13).
Containment	Stop leak if you can do it without risk. Prevent entry into waterways, sewers, basements or confined areas. Dike far ahead of large spill for later disposal.
Decontamination	No information available.
Environmental Precautionary Measures	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater.
Evacuation Criteria	Spill or leak area should be isolated immediately. Keep unnecessary and unprotected personnel from entering the area. Keep personnel out of low areas.

Personal Precautionary Measures Use personal protective equipment as required (see SECTION 8).

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Avoid breathing vapours and contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8). Thaw and mix well before using. Avoid exposure to elevated temperatures.
Storage	Store in a cool, dry and well-ventilated place, out of direct sunlight. Keep container tightly closed. Store under an oxygen-free nitrogen atmosphere. Avoid freezing. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10). *Storage temperature: >16 ° C
Container	Keep in the original container. *Do not store in Copper, Copper alloys, Galvanized containers.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	For Triethanolamine (CAS No. 102-71-6): - Safe Work Australia Exposure Standard: TWA = 5 mg/m3; Respiratory and/or skin sensitiser (Sen). - New Zealand Workplace Exposure Standard [Next review 2022]: TWA = 5 mg/m3. COMPONENT: Diethanolamine (CAS No. 111-42-2): - Safe Work Australia Exposure Standard: TWA = 3 ppm (13 mg/m3). - New Zealand Workplace Exposure Standard: TWA = 3 ppm (13 mg/m3); Skin absorption (skin).
Exposure Limits	No Data Available
Biological Limits	No information available.
Engineering Measures	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
Personal Protection Equipment	- Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. Wear respiratory protection when adverse effects, such as respiratory irritation or discomfort, have been experienced or where indicated by your risk assessment process. Recommended: For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator with Organic vapour cartridge and a particulate pre-filter (refer to AS/NZS 1715 & 1716). - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Use safety glasses (with side shields). - Hand protection: Handle with gloves. Recommended: Use chemical resistant gloves, e.g. Chlorinated polyethylene, Polyethylene, Ethyl vinyl alcohol laminate (EVAL). Avoid gloves made of Polyvinyl alcohol (PVA). - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Use protective clothing chemically resistant to this material. Selection of specific items such as face-shield, boots, apron or full-body suit will depend on the task.
Special Hazards Precaustions	Do not use sodium nitrite or other nitrosating agents in formulations containing this product. Suspected cancer-causing nitrosamines could be formed.
Work Hygienic Practices	Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Take off contaminated clothing and wash it before reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Liquid
Odour	Ammoniacal
Colour	Colourless to yellow
pH	No Data Available
Vapour Pressure	0.01 hpa(25° C)
Relative Vapour Density	No Data Available
Boiling Point	360 ° C (decomposition)
Melting Point	No Data Available
Freezing Point	20.5 ° C
Solubility	Completely miscible with water 20° C [Lit.]
Specific Gravity	No Data Available
Flash Point	179 ° C [Closed cup]
Auto Ignition Temp	No Data Available
Evaporation Rate	0.9 (Butyl acetate = 1) [Estimated]

Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	1.124 g/cm³(30° C)
Specific Heat	No Data Available
Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	No Data Available
VOC Volume	No Data Available
Additional Characteristics	No information available.
Potential for Dust Explosion	Not applicable.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	No information available.
Properties That May Initiate or Contribute to Fire Intensity	May burn but does not ignite readily. *Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures, possibly resulting in spontaneous combustion.
Reactions That Release Gases or Vapours	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include Carbon oxides, Nitrogen oxides (NOx). Decomposition products depend upon temperature, air supply and the presence of other materials.
Release of Invisible Flammable Vapours and Gases	Heating above 60 ° C in the presence of aluminium can result in corrosion and generation of flammable hydrogen gas.

10. STABILITY AND REACTIVITY

General Information	Exposure to elevated temperatures can cause product to decompose. Generation of gas during decomposition can cause pressure in closed systems.
Chemical Stability	Stable under recommended storage conditions.
Conditions to Avoid	Avoid exposure to elevated temperatures. Avoid freezing.
Materials to Avoid	Avoid contact with nitrites, strong acids, strong oxidisers and metals, such as Zinc, Galvanized metals. Avoid unintended contact with halogenated hydrocarbons. *Product may potentially react with various halogenated organic solvents, resulting in temperature and/or pressure increases.
Hazardous Decomposition Products	During a fire, smoke may contain the original material in addition to combustion products of varying composition which may be toxic and/or irritating. Combustion products may include Carbon oxides, Nitrogen oxides (NOx). Decomposition products depend upon temperature, air supply and the presence of other materials. *Heating above 60° C in the presence of aluminium can result in corrosion and generation of flammable hydrogen gas.
Hazardous Polymerisation	Polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

General Information

Toxicological information:
- Acute toxicity: Not classified based on available information.
- Skin corrosion/irritation: Not classified based on available information. COMPONENT: Triethanolamine: Brief contact is essentially non-irritating to skin. Repeated exposure may cause irritation, even a burn. COMPONENT: Diethanolamine: Prolonged contact may cause skin irritation with local redness. Repeated contact may cause skin burns.
- Serious eye damage/irritation: Not classified based on available information. COMPONENT: Triethanolamine: May cause slight eye irritation. Corneal injury is unlikely. COMPONENT: Diethanolamine: May cause severe eye irritation and corneal injury. Effects may be slow to heal.
- Respiratory/skin sensitisation: Not classified based on available information. COMPONENT: Triethanolamine: Did not cause allergic skin reactions when tested in guinea pigs. COMPONENT: Diethanolamine: Did not cause allergic skin reactions when tested in guinea pigs.
- Germ cell mutagenicity: Not classified based on available information. COMPONENT: Triethanolamine: In vitro genetic toxicity studies were negative. COMPONENT: Diethanolamine: In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.
- Carcinogenicity: Not classified based on available information. COMPONENT: Triethanolamine: Findings from a chronic skin painting study by NTP include liver tumors in mice. Mechanistic studies indicate that tumor formation is of questionable relevance to humans. COMPONENT: Diethanolamine: Findings from a chronic skin painting study by NTP include liver and kidney tumors in mice; no tumors were observed in rats. Mechanistic studies indicate that tumor formation is of questionable relevance to humans. A number of factors may have influenced the results and are being considered in their interpretation.
- Reproductive toxicity: Not classified based on available information. COMPONENT: Triethanolamine: Has been toxic to the foetus in laboratory animals at doses toxic to the mother. However, the relevance of this to humans is unknown. Dose levels producing these effects were many times higher than any dose levels expected from exposure due to use. COMPONENT: Diethanolamine: In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals. Repeated excessive exposures to high amounts may cause effects on testes and fertility in males. Has been toxic to the foetus in laboratory animals at doses toxic to the mother. Did not cause birth defects in laboratory animals.
- STOT (single exposure): Not classified based on available information. Evaluation of available data suggests that this material is not an STOT-SE toxicant.
- STOT (repeated exposure): Not classified based on available information. COMPONENT: Diethanolamine: Results from repeated exposure tests in laboratory animals include anaemia (rats) and effects on kidney (rats and mice) and liver (mice). Heart and nervous system effects were also observed in animals given exaggerated doses. Changes in other organs, causes of which are nonspecific, were judged secondary to the poor health of the animals due to the extremely high doses given.
- Aspiration toxicity: Not classified based on available information. Based on physical properties, not likely to be an aspiration hazard.

Information on possible routes of exposure:
- Ingestion: Very low toxicity if swallowed. Harmful effects not anticipated from swallowing small amounts.
- Eye contact: May cause slight eye irritation. Corneal injury is unlikely.
- Skin contact: Prolonged skin contact is unlikely to result in absorption of harmful amounts. Brief contact is essentially non-irritating to skin. Repeated exposure may cause irritation, even a burn. Skin contact may cause an allergic skin reaction in a small proportion of individuals.
- Inhalation: At room temperature, exposure to vapor is minimal due to low volatility; single exposure is not likely to be hazardous. Based on the available data, respiratory irritation was not observed (Triethanolamine).

Chronic effects: Based on available data for the component(s), repeated exposures are not anticipated to cause significant adverse effects. In vitro genetic toxicity studies were negative for component(s) tested.

Acute

Ingestion

Acute toxicity (Oral):
- LD50, Rat: >5,000 mg/kg [Based on information for component(s); Supplier's SDS].

COMPONENT: Triethanolamine:
- LD50, Rat: 6,400 mg/kg

COMPONENT: Diethanolamine:
- LD50, Rat (male & female): 1,600 mg/kg [OECD 401 or equivalent].

Other

Acute toxicity (Dermal):
- LD50, Rabbit: >2,000 mg/kg [Based on information for component(s); Supplier's SDS].

COMPONENT: Triethanolamine:
- LD50, Rabbit: >2,000 mg/kg (No deaths occurred at this concentration).

COMPONENT: Diethanolamine:
- LD50, Rabbit (male): >8,200 mg/kg

Inhalation	Acute toxicity (Inhalation): COMPONENT: Triethanolamine: No deaths occurred following exposure to a saturated atmosphere. COMPONENT: Diethanolamine: - LC50, Rat (male): 3.35 mg/l (4 h) dust/mist (No deaths occurred at this concentration).
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: COMPONENT: Triethanolamine: - Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested). May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms. - Chronic NOEC, Crustacea (Daphnia magna): 16 mg/l (21 d) semi-static. COMPONENT: Diethanolamine: - Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested). May increase pH of aquatic systems to > pH 10 which may be toxic to aquatic organisms. - Chronic NOEC, Crustacea (Daphnia magna): 0.78 mg/l (21 d) semi-static.
Persistence/Degradability	COMPONENT: Triethanolamine: - Material is readily biodegradable (97 %, 28 d) [OECD Test Guideline 301A]. COMPONENT: Diethanolamine: - Material is readily biodegradable (93 %, 28 d) [OECD Test Guideline 301F].
Mobility	COMPONENT: Triethanolamine: - Partition coefficient (Koc): 10 [Estimated]. COMPONENT: Diethanolamine: - Partition coefficient (Koc): 1 [Estimated].
Environmental Fate	Do not dump into any sewers, on the ground or into any body of water.
Bioaccumulation Potential	COMPONENT: Triethanolamine: - Bioconcentration potential is low (BCF < 100 or Log Pow < 3). COMPONENT: Diethanolamine: - Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations. Waste characterisations and compliance with applicable laws are the responsibility solely of the waste generator. For unused and uncontaminated product, send to a licensed/permitted incinerator or other thermal destructive device.
Special Precautions for Land Fill	No information available.

14. TRANSPORT INFORMATION

Land Transport

Proper Shipping Name	Triethanolamine
Class	C2 Combustible Liquids - Flash Point >93° C, Closed Cup, Not Excluded Flammable
Subsidiary Risk(s)	No Data Available

	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport

IMDG Code

Proper Shipping Name	Triethanolamine
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

Proper Shipping Name	Triethanolamine
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

15. OTHER INFORMATION

Revision 3

Key/Legend

< Less Than
> Greater Than
AICS Australian Inventory of Chemical Substances
atm Atmosphere
CAS Chemical Abstracts Service (Registry Number)
cm² Square Centimetres
CO2 Carbon Dioxide
COD Chemical Oxygen Demand
deg C (° C) Degrees Celcius
deg F (° F) Degrees Farenheit
g Grams
g/cm³ Grams per Cubic Centimetre
g/l Grams per Litre
HSNO Hazardous Substance and New Organism
IDLH Immediately Dangerous to Life and Health
immiscible Liquids are insoluable in each other.
inHg Inch of Mercury
inH2O Inch of Water
K Kelvin
kg Kilogram
kg/m³ Kilograms per Cubic Metre
lb Pound
LC50 LC stands for lethal concentration. LC50 is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.
LD50 LD stands for Lethal Dose. LD50 is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.
ltr or L Litre
m³ Cubic Metre
mbar Millibar
mg Milligram
mg/24H Milligrams per 24 Hours
mg/kg Milligrams per Kilogram
mg/m³ Milligrams per Cubic Metre
Misc or Miscible Liquids form one homogeneous liquid phase regardless of the amount of either component present.
mm Millimetre
mmH2O Millimetres of Water
mPa.s Millipascals per Second
N/A Not Applicable
NIOSH National Institute for Occupational Safety and Health
NOHSC National Occupational Heath and Safety Commission
OECD Organisation for Economic Co-operation and Development
Oz Ounce
PEL Permissible Exposure Limit
Pa Pascal
ppb Parts per Billion
ppm Parts per Million
ppm/2h Parts per Million per 2 Hours
ppm/6h Parts per Million per 6 Hours
psi Pounds per Square Inch
R Rankine
RCP Reciprocal Calculation Procedure
STEL Short Term Exposure Limit
TLV Threshold Limit Value
tne Tonne
TWA Time Weighted Average
ug/24H Micrograms per 24 Hours
UN United Nations
wt Weight