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MATERIAL SAFETY DATA SHEET (MSDS/SDS)

TRIETHANOLAMINE 85% — TEA 85

SECTION 1 — IDENTIFICATION

1.1 Product identifier

Product Name:
Triethanolamine 85%

Abbreviation:
TEA 85

Product Description:
Aqueous solution of triethanolamine

Chemical Family:
Alkanolamines / Amino alcohols

Primary Chemical Name:
Triethanolamine

IUPAC Name:
2-[Bis(2-hydroxyethyl)amino]ethan-1-ol

Synonyms:

- TEA
- Trolamine
- Tri(2-hydroxyethyl)amine
- Tris(2-hydroxyethyl)amine
- 2,2′,2″-Nitrilotriethanol
- Triethylolamine

CAS Number:
102-71-6

EC Number:
203-049-8

Molecular Formula:
$C_6H_{15}NO_3$

Molecular Weight:
149.19 g/mol

1.2 Relevant identified uses

Recommended uses include:

- Cement grinding aids
- Concrete admixtures
- pH adjustment
- Surfactant and detergent manufacturing
- Emulsifier production
- Textile processing
- Metalworking fluids
- Corrosion-inhibitor formulations
- Gas treatment
- Adhesives and sealants
- Paints and coatings
- Industrial cleaners
- Chemical intermediate
- Personal-care and cosmetic formulations, subject to applicable regulations

1.3 Uses advised against

- Uses contrary to applicable legislation
- Direct consumer use without appropriate formulation
- Food or feed applications unless the supplied grade is specifically approved
- Mixing with nitrosating agents
- Any application not evaluated by the user for safety and regulatory compliance

Supplier:
BASEKIM KIMYASAL URUNLER IC VE DIS TIC. LTD. STI.

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SECTION 2 — HAZARD IDENTIFICATION

2.1 Classification of the substance or mixture

Draft GHS classification

Serious Eye Damage/Eye Irritation — Category 2A

The final classification must be confirmed against the precise composition, impurity profile, test data, intended market, and applicable national implementation of GHS.

2.2 Label elements

Signal Word:
Warning

GHS Pictogram:
GHS07 — Exclamation Mark

Hazard statement

H319: Causes serious eye irritation.

Precautionary statements

Prevention

- **P264:** Wash hands and exposed skin thoroughly after handling.
- **P280:** Wear protective gloves and eye/face protection.

Response

- **P305 + P351 + P338:** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- **P337 + P313:** If eye irritation persists: Get medical advice/attention.

2.3 Other hazards

- Prolonged or repeated skin contact may cause irritation or dryness.
- Heated product, mist, or aerosol may irritate the respiratory tract.
- Spilled product may create a serious slipping hazard.
- Product may absorb carbon dioxide and moisture from the atmosphere.

- Contact with certain nitrosating agents can result in the formation of nitrosamines.
- The mixture is not expected to meet PBT or vPvB criteria based on available information.
- No endocrine-disrupting properties are known at concentrations requiring disclosure, subject to supplier verification.

SECTION 3 — COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Chemical characterization

Mixture.

Component	CAS Number	EC Number	Typical Concentration
Triethanolamine	102-71-6	203-049-8	Approximately 85%
Water	7732-18-5	231-791-2	Approximately 15%
Related ethanolamines and process impurities	Various	Various	Trace, if present

Important formulation note:
This composition assumes that the product is an aqueous TEA 85 low-freeze grade. Some commercial “TEA 85” products may contain diethanolamine or other ethanolamines instead of, or in addition to, water. The final composition must be replaced with the manufacturer’s verified formulation and Certificate of Analysis.

SECTION 4 — FIRST-AID MEASURES

4.1 Description of first-aid measures

Eye contact

Immediately rinse cautiously with clean, lukewarm water for at least 15 minutes.

Hold the eyelids open and move the eyes in all directions while rinsing.

Remove contact lenses if present and easy to do.

Continue rinsing.

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Obtain medical attention if irritation, pain, redness, blurred vision, or tearing persists.

Skin contact

Remove contaminated clothing and footwear.

Wash affected skin thoroughly with soap and plenty of water.

Obtain medical advice if irritation develops or persists.

Wash contaminated clothing before reuse.

Clean contaminated footwear before reuse.

Inhalation

Move the exposed person to fresh air.

Keep the person comfortable for breathing.

At normal temperatures, significant vapor exposure is unlikely because of the product's low volatility. Mist or aerosol generated by spraying or heating may cause irritation.

Obtain medical attention if coughing, breathing discomfort, or other symptoms persist.

Ingestion

Rinse mouth thoroughly with water.

Do not induce vomiting unless instructed by qualified medical personnel.

Never give anything by mouth to an unconscious person.

Give small amounts of water if the person is conscious and able to swallow.

Contact a physician or poison information center if a significant amount has been swallowed or symptoms occur.

4.2 Most important symptoms and effects

Possible symptoms include:

- Eye redness
- Eye pain
- Excessive tearing
- Temporary blurred vision
- Skin irritation
- Skin dryness
- Nausea or gastrointestinal discomfort after ingestion
- Respiratory irritation from heated vapor, mist, or aerosol

4.3 Indication of immediate medical attention

Treat symptomatically.

No specific antidote is known.

Chemical eye exposure requires prompt and thorough irrigation.

SECTION 5 — FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media

Use extinguishing media appropriate for the surrounding fire:

- Water spray or water fog
- Alcohol-resistant foam
- Dry chemical powder
- Carbon dioxide

5.2 Unsuitable extinguishing media

Do not use a direct, high-pressure water jet where it may spread burning material or contaminated liquid.

5.3 Specific hazards arising from the product

The aqueous product is not readily ignitable under normal handling conditions.

Water may evaporate during prolonged heating, leaving a higher-concentration organic residue capable of burning.

Closed containers exposed to fire may rupture because of pressure buildup.

Hazardous thermal-decomposition or combustion products may include:

- Carbon monoxide
- Carbon dioxide
- Nitrogen oxides
- Ammonia
- Irritating or toxic organic fumes

5.4 Advice for firefighters

Wear:

- Positive-pressure self-contained breathing apparatus
- Full structural firefighting protective clothing

Cool exposed containers with water spray.

Prevent contaminated firefighting water from entering drains, soil, or natural waterways.

Approach the fire from upwind.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions

- Restrict access to the affected area.
- Ensure adequate ventilation.
- Avoid contact with the eyes, skin, and clothing.
- Avoid breathing mist or aerosol.
- Wear appropriate personal protective equipment.
- Exercise caution because spilled product is slippery.

6.2 Environmental precautions

Prevent large or uncontrolled releases from entering:

- Drains

- Sewers
- Surface water
- Groundwater
- Soil

Notify the relevant authority where required by local legislation.

6.3 Containment and cleanup

Small spills

Absorb with:

- Sand
- Earth
- Vermiculite
- Diatomaceous earth
- Universal chemical absorbent

Collect absorbed material in a suitable, labeled container.

Wash the residue with water only where the resulting wastewater can be properly controlled.

Large spills

Stop the leak when this can be done safely.

Dike or contain the spill.

Recover free liquid by pumping into compatible containers.

Absorb remaining material with inert absorbent.

Do not return contaminated recovered material to the original container.

6.4 Reference to other sections

See Section 8 for personal protection and Section 13 for disposal guidance.

SECTION 7 — HANDLING AND STORAGE

7.1 Precautions for safe handling

- Avoid contact with eyes, skin, and clothing.
- Avoid generating mist or aerosol.
- Use adequate general or local exhaust ventilation.
- Keep containers closed when not in use.
- Do not eat, drink, or smoke in handling areas.
- Wash thoroughly after handling.
- Remove contaminated clothing before entering eating areas.
- Provide eyewash stations and safety showers near handling locations.
- Do not mix with nitrites or other nitrosating agents.
- Avoid uncontrolled contact with acids or strong oxidizers.
- Prevent contamination of the product.

7.2 Conditions for safe storage

Store:

- In tightly closed, properly labeled containers
- In a cool, dry, well-ventilated area
- Away from heat and ignition sources
- Away from acids and oxidizing agents
- Away from nitrites and other nitrosating substances
- Away from food and animal feed

Protect containers from physical damage.

Prevent prolonged exposure to air, moisture, and carbon dioxide.

Suitable storage materials may include compatible stainless steel or approved lined containers. Product compatibility with seals, gaskets, coatings, and construction materials should be confirmed before bulk storage.

Avoid prolonged contact with copper, copper alloys, aluminum, zinc, or galvanized materials unless compatibility has been established.

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7.3 Specific end uses

Use according to the relevant product specification, technical data sheet, and industrial process instructions.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

A universally applicable OSHA permissible exposure limit has not been established specifically for the supplied mixture.

An occupational exposure guideline of **5 mg/m³ as an 8-hour time-weighted average** is used by some authorities for triethanolamine. Applicable national and workplace limits must be checked before use.

8.2 Engineering controls

Use adequate general ventilation.

Provide local exhaust ventilation where:

- Product is heated
- Mist or aerosol is generated
- Product is sprayed
- Open transfer operations are performed

Provide readily accessible:

- Emergency eyewash
- Safety shower

8.3 Personal protective equipment

Eye and face protection

Wear:

- Chemical splash goggles conforming to an applicable standard

- Face shield where splashing is reasonably foreseeable

A face shield should be used in addition to, not instead of, goggles.

Hand protection

Wear chemical-resistant gloves.

Potentially suitable materials include:

- Butyl rubber
- Nitrile rubber
- Neoprene

Glove selection must be based on supplier permeation data, breakthrough time, glove thickness, task duration, and workplace conditions.

Skin and body protection

Wear:

- Long-sleeved protective clothing
- Chemical-resistant apron for splash operations
- Suitable protective footwear

Respiratory protection

Respiratory protection is normally unnecessary when adequate ventilation is maintained and mist is not generated.

Where exposure limits may be exceeded, use a properly selected and approved respirator appropriate for organic vapor and/or particulate mist, in accordance with a written respiratory-protection program.

Do not use air-purifying respirators in oxygen-deficient atmospheres or conditions immediately dangerous to life or health.

Hygiene measures

Wash hands, forearms, and face after handling.

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Do not take contaminated clothing home without appropriate cleaning.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

The following values are typical or estimated for an aqueous TEA 85 grade and are not guaranteed sales specifications.

Property	Typical Information
Physical state	Liquid
Appearance	Clear, colorless to pale-yellow viscous liquid
Odor	Mild ammonia-like odor
Odor threshold	Not established
pH	Approximately 10–11
Melting/freezing point	Approximately −5°C for low-freeze aqueous grade
Initial boiling point/range	Approximately 100°C initially; composition changes as water evaporates
Flash point	Not expected below approximately 93°C; verify by grade-specific testing
Evaporation rate	Not determined
Flammability	Not classified as a flammable liquid under typical transport criteria
Lower/upper explosive limits	Not determined
Vapor pressure	Low
Vapor density	Not determined for the mixture
Relative density	Approximately 1.12 at ambient temperature
Solubility in water	Completely miscible
Partition coefficient	Not determined for the mixture
Auto-ignition temperature	Not determined for the mixture
Decomposition temperature	Not determined
Viscosity	Viscous liquid; grade- and temperature-dependent
Explosive properties	Not expected to be explosive
Oxidizing properties	Not oxidizing
Molecular weight of TEA	149.19 g/mol

Property	Typical Information
component	

SECTION 10 — STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction is expected under recommended handling and storage conditions.

The product is alkaline and may react exothermically with acids.

10.2 Chemical stability

Stable under normal ambient conditions and anticipated storage conditions.

Product may absorb moisture and carbon dioxide from the air.

10.3 Possibility of hazardous reactions

Potential hazardous reactions include:

- Exothermic reaction with strong acids
- Reaction with strong oxidizing agents
- Nitrosamine formation in the presence of nitrites or other nitrosating agents under suitable conditions
- Corrosion or degradation of incompatible metals and materials

Hazardous polymerization is not expected.

10.4 Conditions to avoid

Avoid:

- Excessive heat
- Open flames
- Aerosol or mist formation
- Contamination
- Prolonged exposure to air
- Contact with incompatible materials

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10.5 Incompatible materials

- Strong acids
- Strong oxidizing agents
- Acid anhydrides
- Acid chlorides
- Nitrites
- Other nitrosating agents
- Reactive halogenated compounds
- Certain metals and alloys, including copper and copper alloys
- Materials shown to be incompatible by storage testing

10.6 Hazardous decomposition products

Thermal decomposition or combustion may produce:

- Carbon monoxide
- Carbon dioxide
- Nitrogen oxides
- Ammonia
- Irritating organic fumes

SECTION 11 — TOXICOLOGICAL INFORMATION

11.1 Likely routes of exposure

- Eye contact
- Skin contact
- Inhalation of mist or heated vapor
- Accidental ingestion

11.2 Acute toxicity

The mixture is not expected to meet acute-toxicity classification criteria based on available information for triethanolamine and water.

Reported oral acute-toxicity values for triethanolamine are generally above the thresholds used for acute-toxicity classification.

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11.3 Skin corrosion/irritation

Prolonged or repeated contact may produce mild or temporary skin irritation, particularly where the skin is already damaged.

11.4 Serious eye damage/irritation

Direct contact may cause serious eye irritation, including:

- Redness
- Pain
- Tearing
- Temporary visual disturbance

11.5 Respiratory or skin sensitization

Not expected to be classified as a respiratory or skin sensitizer based on available data.

Cases of contact allergy have been reported in susceptible individuals.

11.6 Germ-cell mutagenicity

Not expected to be classified as mutagenic based on available information.

11.7 Carcinogenicity

Triethanolamine is listed by IARC in **Group 3 — not classifiable as to its carcinogenicity to humans**.

The product must not be allowed to form nitrosamines through contamination or incompatible formulation.

11.8 Reproductive toxicity

Not expected to be classified for reproductive toxicity based on available information.

11.9 Specific target-organ toxicity — single exposure

Not expected to meet classification criteria under normal use.

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Mist or heated vapor may irritate the respiratory tract.

11.10 Specific target-organ toxicity — repeated exposure

Not expected to meet classification criteria for the assumed aqueous grade based on available information. Repeated excessive exposure should nevertheless be avoided.

11.11 Aspiration hazard

Not expected to present an aspiration hazard because of its physical properties and viscosity.

11.12 Other information

Pre-existing disorders of the skin or eyes may be aggravated by exposure.

SECTION 12 — ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Triethanolamine generally shows relatively low acute aquatic toxicity.

Large releases may alter water pH and may adversely affect aquatic organisms or wastewater-treatment processes.

Avoid uncontrolled environmental discharge.

12.2 Persistence and degradability

The triethanolamine component is expected to be biodegradable under suitable aerobic conditions.

12.3 Bioaccumulative potential

Significant bioaccumulation is not expected.

12.4 Mobility in soil

The product is water-miscible and may be mobile in soil and water.

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12.5 PBT and vPvB assessment

The components are not expected to meet the criteria for persistent, bioaccumulative and toxic, or very persistent and very bioaccumulative substances, subject to final regulatory assessment.

12.6 Endocrine-disrupting properties

No endocrine-disrupting properties are known at concentrations requiring disclosure, subject to supplier verification.

12.7 Other adverse effects

Large releases may increase chemical oxygen demand and alter the pH of receiving water.

SECTION 13 — DISPOSAL CONSIDERATIONS

13.1 Waste-treatment methods

Prevent disposal into:

- Drains
- Sewers
- Surface water
- Groundwater
- Soil

Recover or recycle uncontaminated product where technically and legally feasible.

Dispose of waste through an authorized waste-management contractor.

Waste classification must be determined by the user based on:

- Actual product composition
- Contamination
- Intended disposal method
- Applicable national and local requirements

13.2 Contaminated packaging

Drain containers thoroughly.

Do not reuse empty packaging unless it has been properly cleaned, inspected, and approved.

Recycle or dispose of packaging in accordance with applicable regulations.

Empty containers may retain product residue and must be handled with the same precautions as the product.

SECTION 14 — TRANSPORT INFORMATION

Based on typical transport classifications for triethanolamine aqueous solutions, this product is generally not regulated as dangerous goods.

Transport Regulation	Classification
ADR/RID — Road/Rail	Not regulated as dangerous goods
IMDG — Sea	Not regulated as dangerous goods
ICAO/IATA — Air	Not regulated as dangerous goods
ADN — Inland waterways	Not regulated as dangerous goods

UN Number:
Not assigned

UN Proper Shipping Name:
Not applicable

Transport Hazard Class:
Not applicable

Packing Group:
Not applicable

Environmental Hazard:
Not classified as a marine pollutant

Special precautions:

- Transport in securely closed, compatible containers.
- Protect containers from physical damage.
- Keep containers upright.
- Prevent exposure to excessive heat.
- Observe all applicable national transport requirements.

Transport in bulk according to IMO instruments:
Not intended for bulk maritime transport unless specifically arranged and evaluated.

SECTION 15 — REGULATORY INFORMATION

15.1 Safety, health, and environmental regulations

This draft is structured with reference to:

- Globally Harmonized System of Classification and Labelling of Chemicals
- OSHA Hazard Communication Standard, 29 CFR 1910.1200
- Regulation (EC) No. 1907/2006 — REACH
- Regulation (EC) No. 1272/2008 — CLP
- Applicable ADR, RID, IMDG, ICAO, and IATA transport provisions

Triethanolamine identification:

- CAS: 102-71-6
- EC: 203-049-8

Inventory status and market-specific restrictions must be confirmed for each importing country.

15.2 Chemical safety assessment

A product-specific chemical safety assessment has not been supplied for preparation of this draft.

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15.3 Additional regulatory considerations

Users manufacturing cosmetics, personal-care products, biocides, pharmaceuticals, food-contact materials, or other regulated products must confirm compliance with sector-specific restrictions.

Avoid formulations that permit nitrosamine formation, including incompatible combinations with nitrites or other nitrosating systems.

SECTION 16 — OTHER INFORMATION

Document control

Document Title:
Material Safety Data Sheet — Triethanolamine 85%

Revision Number:
1.0 Draft

Issue Date:
To be assigned

Supersedes:
New document

Prepared For:
BASEKIM

Prepared By:
Technical / Regulatory Department

Full text of hazard statements

H319: Causes serious eye irritation.

Abbreviations

- **ADR:** European Agreement concerning the International Carriage of Dangerous Goods by Road

- **CAS:** Chemical Abstracts Service
- **CLP:** Classification, Labelling and Packaging Regulation
- **EC:** European Community
- **GHS:** Globally Harmonized System
- **IARC:** International Agency for Research on Cancer
- **IATA:** International Air Transport Association
- **ICAO:** International Civil Aviation Organization
- **IMDG:** International Maritime Dangerous Goods Code
- **PBT:** Persistent, Bioaccumulative and Toxic
- **PPE:** Personal Protective Equipment
- **REACH:** Registration, Evaluation, Authorisation and Restriction of Chemicals
- **SDS:** Safety Data Sheet
- **TEA:** Triethanolamine
- **TWA:** Time-Weighted Average
- **vPvB:** Very Persistent and Very Bioaccumulative

Important verification requirements

Before official publication, BASEKIM must verify:

1. Whether the balance of the TEA 85 product is water, diethanolamine, other ethanolamines, or a combination.
2. The exact impurity profile and disclosure thresholds.
3. Product-specific GHS classification for each destination market.
4. Physical-property values against the current product specification.
5. Occupational exposure limits applicable in each country.
6. Transport classification against the exact formulation.
7. Supplier legal name, full address, competent contact, and emergency telephone number.
8. REACH registration and chemical-inventory status where applicable.
9. The correct issue date, revision date, document number, and approval signatures.