

DIETHYL ETHER (ANHYDROUS)

Date of compilation: 13-08-2026 | Revised: 13-08-2026 | Version: 1

SECTION 1: IDENTIFICATION

1.1 GHS Product identifier:

DIETHYL ETHER (ANHYDROUS)
Ether; Ethyl ether; Ethoxyethane; Sulphuric ether
CAS: 60-29-7

Other means of identification:

Not relevant

1.2 Recommended use of the chemical and restrictions on use:

Relevant uses: Laboratory and industrial solvent, extraction solvent, chemical intermediate, starting fluid for internal combustion engines. For industrial/laboratory user only.
Uses advised against: All uses not specified in this section or in section 7.3. Not for use as an anaesthetic agent (obsolete, superseded medical use) or in any consumer application.

1.3 Supplier's details:

SURAJ CHEMICALS
No 92, Govindappa Naicken Street, Shiva Complex, Chennai – 600001, Tamil Nadu, India
Tel: +91 - 7092722822, +91 - 9840284032 / +91 - 44 - 25393652, 42130281
Email: sales@surajchemicals.com | Website: www.surajchemicals.com
GST No: 33ACEPV8190L1ZZ

1.4 Emergency phone number:

Emergency Contact No: +91 - 7092722822, +91 - 9840284032

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture:

GHS:
Classification of this product has been carried out in accordance with the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Flam. Liq. 1	Flammable liquids, Category 1, H224
Eye Irrit. 2	Eye irritation, Category 2, H319
STOT SE 3	Narcotic effects, single exposure, Category 3, H336

2.2 GHS label elements, including precautionary statements:

GHS: Danger

Hazard statements:

Flam. Liq. 1: H224 – Extremely flammable liquid and vapour.
Eye Irrit. 2: H319 – Causes serious eye irritation.
STOT SE 3: H336 – May cause drowsiness or dizziness.

Precautionary statements:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233: Keep container tightly closed.
P240: Ground/bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lighting equipment.
P242: Use only non-sparking tools.
P243: Take precautionary measures against static discharge.
P261: Avoid breathing vapours.
P271: Use only outdoors or in a well-ventilated area.
P280: Wear protective gloves/eye protection.
P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+P340: IF INHALED: Remove person to fresh air and keep comfortable for breathing.
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.
P370+P378: In case of fire: Use appropriate extinguishing media (see section 5) to extinguish.
P403+P233: Store in a well-ventilated place. Keep container tightly closed.
P403+P235: Store in a well-ventilated place. Keep cool.
P501: Dispose of contents/container in accordance with local/national regulations.

2.3 Other hazards which do not result in classification:

Diethyl ether is a peroxide-forming substance: on prolonged exposure to air and light, especially after partial evaporation, it can form unstable, shock- and heat-sensitive peroxides that may concentrate and present an explosion hazard. See sections 7 and 10.

SECTION 3: COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Substances:

Chemical description: Diethyl Ether, Anhydrous
In accordance with Annex 4.3.3 of the GHS, the product contains:

Identification	Chemical Name / Classification	Concentration
CAS: 60-29-7 EINECS: 200-467-2	Diethyl Ether — Flam. Liq. 1: H224; Eye Irrit. 2: H319; STOT SE 3: H336 – Danger	≥99.5% (anhydrous grade, typical)

To obtain more information on the hazards of the substances, consult sections 11, 12 and 16.

3.2 Mixtures:

Non-applicable

SECTION 4: FIRST AID MEASURES

4.1 Description of necessary first-aid measures:

Request medical assistance immediately in case of significant exposure, showing the SDS of this product.

By inhalation:

Remove the person affected from the area of exposure, provide fresh air and keep at rest. High vapour concentrations may cause drowsiness, dizziness, headache and, in severe cases, loss of consciousness. Seek medical attention if symptoms persist or are severe.

By skin contact:

Remove contaminated clothing immediately (fire risk). Wash affected skin with plenty of water. Evaporative cooling may cause mild frostbite-like effects on prolonged liquid contact; treat as a cold burn if this occurs.

By eye contact:

Rinse immediately with plenty of water for at least 15 minutes, holding eyelids apart. Remove contact lenses, if present and easy to do. Seek medical advice if irritation persists.

By ingestion:

Do not induce vomiting (aspiration risk due to volatility). Rinse mouth with water. Seek medical attention immediately.

4.2 Most important symptoms/effects, acute and delayed:

Causes serious eye irritation. Inhalation of vapours causes narcotic/CNS depressant effects (drowsiness, dizziness, headache, and at high concentrations, unconsciousness). Extremely flammable – principal hazard is fire/explosion. See section 11.

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

Treat symptomatically. No specific antidote. Monitor respiratory and cardiac function in cases of significant inhalation exposure.

SECTION 5: FIRE-FIGHTING MEASURES

5.1 Suitable extinguishing media:

Suitable: Dry chemical powder, carbon dioxide (CO²), alcohol-resistant foam. Water spray to cool exposed containers.

Unsuitable: Water jet (may spread burning liquid, not effective as primary extinguishant).

5.2 Specific hazards arising from the chemical:

Extremely flammable liquid and vapour. Vapour is heavier than air and may travel along the ground and be ignited by a distant ignition source, flashing back. Vapour/air mixtures are explosive over a wide concentration range (1.9–36% v/v). Aged or partially evaporated product may contain explosive peroxides that can detonate on shock, friction or heating – treat any suspect container with extreme caution (see section 10).

5.3 Special protective actions for fire-fighters:

Evacuate all non-essential personnel and establish a wide exclusion zone. Wear self-contained breathing apparatus and full fire-resistant protective clothing. Cool fire-exposed containers with water spray from a protected position; do not approach drums suspected of containing concentrated peroxides.

Additional provisions:

Eliminate all ignition sources in the vicinity. Contain fire-fighting water run-off.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures:

For non-emergency personnel:

Evacuate the area immediately. Eliminate all ignition sources (naked flames, sparks, hot surfaces, electrical equipment, mobile phones). Ensure adequate ventilation. Avoid breathing vapours.

For emergency responders:

Wear appropriate flame-resistant, chemical-resistant PPE and self-contained breathing apparatus as per section 8. Use intrinsically safe (explosion-proof) equipment only.

6.2 Environmental precautions:

Prevent product from entering drains, sewers or watercourses (fire/explosion risk in confined spaces such as drains). Contain spillage.

6.3 Methods and materials for containment and cleaning up:

Shut off leak if safe to do so. Absorb with inert, non-combustible absorbent material (sand, vermiculite). Collect into closed, labelled, non-sparking containers for disposal. Ventilate the area thoroughly before resuming normal activity. Do not use equipment that may generate sparks.

6.4 Reference to other sections:

See sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling:

A. General precautions for safe use:

Handle only in areas with all flames, sparks and heating equipment removed. Use only explosion-proof equipment. Avoid build-up of static electricity. Keep containers tightly closed and minimise exposure to light and air to limit peroxide formation.

B. Technical recommendations for the prevention of fires and explosions:

Ground/bond all equipment used for transfer. Use non-sparking tools. Store away from all sources of ignition and heat. Do not use near open flames, electrical equipment that is not explosion-proof, or in areas with poor ventilation.

C. Technical recommendations on general occupational hygiene:

Do not eat, drink or smoke while handling. Work in well-ventilated areas or use local exhaust ventilation. Wash hands after handling.

D. Technical recommendations to prevent environmental risks:

Avoid release to the environment. Provide bundled, ventilated storage.

7.2 Conditions for safe storage, including any incompatibilities:

A. Specific storage requirements:

Minimum Temp.	15°C
Maximum Temp.	25°C (store in a cool place, away from direct sunlight)
Maximum time	Typical value – refer to current specification sheet; use oldest stock first due to peroxide formation risk

B. General conditions for storage:

Store in a dedicated flammable-liquids store, well away from heat, open flames and other ignition sources, in tightly closed, light-protected containers. Monitor stored containers periodically for peroxide formation (discoloration, crystals, viscosity change) and discard/treat accordingly if detected – do not open or move containers suspected of containing concentrated peroxide crystals. For additional information see subsection 10.5.

7.3 Specific end use(s):

Used as a laboratory and industrial solvent/extraction solvent. Except for the instructions already specified, no special recommendation is required.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters:

Substances whose occupational exposure limits have to be assessed in the workplace, per the Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987):

Identification	Occupational Exposure Limit Type	Value
Diethyl Ether CAS: 60-29-7	Time Weighted average concentration (8 hrs)	400 ppm / 1200 mg/m³
	Short-term exposure limit (15 min)	500 ppm / 1500 mg/m³

8.2 Appropriate engineering controls:

Use local exhaust ventilation and explosion-proof general ventilation to keep vapour concentrations well below occupational exposure limits and below the lower explosive limit.

B. Respiratory protection:

Where ventilation is inadequate, use an organic vapour cartridge respirator. Use supplied-air respiratory protection for high vapour concentrations or confined-space/emergency work.

C. Specific protection for the hands:

Chemical-resistant gloves (e.g., nitrile, viton); note ether rapidly permeates many glove materials – select glove material with proven breakthrough resistance and replace frequently.

D. Eye and face protection:

Chemical splash goggles mandatory given vapour and splash irritation potential.

E. Bodily protection:

Antistatic, flame-resistant protective clothing. Antistatic safety footwear.

F. Additional emergency measures:

Emergency shower and eyewash stations must be readily available in the work area.

Environmental exposure controls:

Avoid environmental release. See subsection 7.1.D.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties:

Appearance	
Physical state at 20°C	Liquid
Appearance	Clear, highly volatile mobile liquid
Color	Colorless
Odor	Characteristic, sweet, pungent
Odour threshold	~1 ppm (typical published value)
Volatility	
Boiling point at atmospheric pressure	34.6°C
Vapour pressure at 20°C	~587 mbar (very high)
Evaporation rate at 20°C	Very fast (faster than diethyl ether's own reference – among the fastest-evaporating common solvents)
Product Description	
Density / Relative density at 20°C	0.713 g/cm³
Dynamic / Kinematic viscosity	~0.22 mPa·s (20°C)
Concentration	≥99.5% (anhydrous, typical)
pH	Not relevant (neutral organic liquid)
Vapour density at 20°C	~2.55 (air = 1; heavier than air)
Partition coefficient n-octanol/water 20°C	Log Pow: ~0.89
Solubility in water at 20°C	~6–7 g/100 mL (moderately soluble)
Decomposition temperature	Typical value – refer to current specification sheet
Melting point/freezing point	-116°C
Flammability	
Flash Point	-40°C (closed cup)
Flammability (solid, gas)	Non-applicable (liquid); extremely flammable
Autoignition temperature	160°C
Lower / Upper flammability limit	1.9–36% (v/v)
Particle Characteristics	
Median equivalent diameter	Non-applicable (liquid)

9.2 Other information:

Explosive properties	Not explosive as supplied; aged product may contain explosive peroxides (see section 10)
Oxidising properties	Not oxidising
Corrosive to metals	Not corrosive to common metals
Heat of combustion	Typical value – refer to current specification sheet
Surface tension at 20°C	~17 mN/m (typical)
Refraction index	~1.353

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity:

Stable under normal conditions of use and storage when protected from light, air and heat. Reacts violently with strong oxidising agents. Slowly forms peroxides on exposure to air and light over extended storage periods, which can become concentrated as the ether evaporates, creating a shock-, friction- and heat-sensitive explosion hazard.

10.2 Chemical stability:

Chemically stable under the indicated conditions of storage, handling and use (cool, dark, tightly closed, inhibited where supplied as such). Stability decreases with prolonged storage, particularly once a container has been opened.

10.3 Possibility of hazardous reactions:

Peroxide formation (see 10.1) is the principal hazardous reaction of concern on storage. Reacts violently with strong oxidisers, halogens and some metal catalysts.

10.4 Conditions to avoid:

Shock/Friction	Contact with Air	Increase in Temperature	Sunlight	Humidity
Avoid for aged/concentrated residues (peroxide risk)	Minimise prolonged exposure (peroxide formation)	Keep away from heat/ignition sources (flash point -40°C)	Avoid prolonged direct exposure (promotes peroxide formation)	Not particularly sensitive

10.5 Incompatible materials:

Strong Oxidisers	Halogens	Strong Acids	Ignition/Heat Sources
Avoid contact (violent reaction)	Avoid contact	Avoid contact	Keep away

10.6 Hazardous decomposition products:

Combustion generates carbon monoxide and carbon dioxide. Prolonged storage/evaporation generates unstable organic peroxides (see section 10.1).

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects:

Diethyl ether has a long-documented toxicological/pharmacological profile from its historical use as a general anaesthetic. In case of exposure that is repetitive, prolonged, or at concentrations higher than the recommended occupational exposure limits, adverse health effects may result:

A. Ingestion (acute effect):

Low acute oral toxicity; however ingestion may cause gastrointestinal irritation and CNS depression. Aspiration into the lungs presents a risk due to the liquid's high volatility.

B. Inhalation (acute effect):

Vapours cause CNS depression (narcosis): drowsiness, dizziness, headache, impaired coordination and, at high concentrations, unconsciousness and respiratory depression (historically exploited as a surgical anaesthetic, now obsolete for that purpose due to its flammability).

C. Contact with skin and eyes (acute effect):

Causes serious eye irritation. Evaporative cooling on skin contact may cause a sensation of cold/mild frostbite-like effect; not classified as a skin irritant under GHS criteria for this substance.

D. CMR effects (carcinogenicity, mutagenicity, reproductive toxicity):

Classification criteria for carcinogenicity, mutagenicity and reproductive toxicity are not met based on available data. IARC: Not classifiable as to carcinogenicity to humans.

E. Sensitizing effects:

Classification criteria for respiratory or skin sensitisation are not met based on available data.

F. Specific target organ toxicity (STOT) – single exposure:

May cause drowsiness or dizziness (narcotic effects) – H336.

G. Specific target organ toxicity (STOT) – repeated exposure:

Classification criteria are not met based on available data.

H. Aspiration hazard:

Classification criteria are not met based on available data under current GHS commercial classification for this substance; nonetheless, due to its high volatility, avoid inducing vomiting after ingestion (see section 4).

Product-specific toxicological information:

Identification	Acute Toxicity	Genus
Diethyl Ether CAS: 60-29-7	LD50 oral: 1215 mg/kg	Rat
	LD50 dermal: >20000 mg/kg	Rabbit
	LC50 inhalation: ~73.8 mg/L (4h)	Rat

SECTION 12: ECOLOGICAL INFORMATION

Not expected to present a significant hazard to aquatic organisms at typical exposure levels; high volatility limits persistence in the aquatic compartment.

12.1 Toxicity:

Acute Toxicity	Species	Genus
LC50: ~2560 mg/L (96h)	Pimephales promelas	Fish
EC50: Typical value – refer to current specification sheet	Non-applicable	Crustacean

12.2 Persistence and degradability:

Expected to biodegrade readily; high volatility results in rapid loss from water to air (short environmental half-life in the aquatic compartment).

12.3 Bioaccumulative potential:

Low bioaccumulation potential (log Pow ~0.89); not expected to bioaccumulate.

12.4 Mobility in soil:

Koc	Henry	Dry Soil	Moist Soil
Low	High (volatilises readily)	High mobility; rapid volatilisation	High mobility; rapid volatilisation

12.5 Results of PBT and vPvB assessment:

Does not meet PBT/vPvB criteria.

12.6 Other adverse effects:

Not described

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Disposal methods:

Dispose of in accordance with local, state and national regulations via a licensed hazardous-waste disposal contractor. Do not discharge to drains (fire/explosion risk). Containers suspected of containing concentrated peroxide residues require specialist disposal – do not attempt to open, move or dispose of such containers without expert guidance. Empty containers may retain flammable vapour – handle with the same precautions as the full product.

Refer to national and local regulations on hazardous waste management.

SECTION 14: TRANSPORT INFORMATION

Transport of dangerous goods by land (ADR 2023 / RID 2023):

14.1 UN number	UN1155
14.2 UN proper shipping name	DIETHYL ETHER
14.3 Transport hazard class(es)	3
14.4 Packing group	I
14.5 Environmental hazard	No
14.6 Special precautions for user	Physico-chemical properties: see section 9; peroxide-forming substance
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by sea (IMDG 41-22):

14.1 UN number	UN1155
14.2 UN proper shipping name	DIETHYL ETHER
14.3 Transport hazard class(es)	3
14.4 Packing group	I
14.5 Marine pollutant	No
14.6 Special precautions for user	EmS Codes: F-E, S-D
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

Transport of dangerous goods by air (IATA/ICAO 2024):

14.1 UN number	UN1155
14.2 UN proper shipping name	DIETHYL ETHER
14.3 Transport hazard class(es)	3
14.4 Packing group	I
14.5 Environmental hazard	No
14.6 Special precautions for user	Forbidden on passenger aircraft in most circumstances; cargo aircraft only, subject to limits
14.7 Transport in bulk (Annex II MARPOL 73/78, IBC Code)	Not relevant

SECTION 15: REGULATORY INFORMATION

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

It is recommended to use the information included in this safety data sheet as data used in a risk evaluation of local circumstances, in order to establish the necessary risk prevention measures for the manipulation, use, storage and disposal of this product. This product is classified as a highly flammable liquid subject to applicable petroleum/flammable-substance storage and licensing regulations.

Other legislation:

- Manufacture, Storage and Import of Hazardous Chemicals Rules, 1989
- The Petroleum Act, 1934 and Petroleum Rules, 2002 (as applicable to flammable liquids)
- The Factories Act, 1948 (Act No. 63 of 1948), as amended by the Factories (Amendment) Act, 1987 (Act 20 of 1987)
- The Chemical Accidents (Emergency Planning, Preparedness, and Response) Rules, 1996
- Public Liability Insurance Act, 1991
- Narcotic Drugs and Psychotropic Substances (NDPS) Rules – controlled precursor chemical in some jurisdictions; verify current licensing requirements before purchase/distribution

SECTION 16: OTHER INFORMATION

Legislation related to safety data sheets:

This safety data sheet has been designed in accordance with Annex 4 – Guidance on the preparation of Safety Data Sheets of the Globally Harmonized System of Classification and Labelling of Chemicals (GHS).

Texts of the legislative phrases mentioned in sections 2 and 3:

- H224: Extremely flammable liquid and vapour.
- H319: Causes serious eye irritation.
- H336: May cause drowsiness or dizziness.

The phrases indicated do not refer to the product itself; they are present merely for informative purposes and refer to the individual components which appear in section 3.

Advice related to training:

Specific training is recommended for personnel handling this product, covering safe storage practices, peroxide-formation awareness and inspection, correct use of explosion-proof equipment, and emergency fire-response procedures.

Principal bibliographical sources:

- Published GHS classification references and standard commercial/regulatory SDS databases for Diethyl Ether, CAS 60-29-7.

Abbreviations and acronyms:

- ADR: European agreement concerning the international carriage of dangerous goods by road | IMDG: International maritime dangerous goods code | IATA: International Air Transport Association | ICAO: International Civil Aviation Organisation | LD50: Lethal Dose 50 | LC50: Lethal Concentration 50 | EC50: Effective Concentration 50 | Log-POW: Octanol-water partition coefficient | Koc: Partition coefficient of organic carbon | IARC: International Agency for Research on Cancer

The information contained in this safety data sheet is based on sources, technical knowledge and current legislation, without being able to guarantee its accuracy. This information cannot be considered a guarantee of the properties of the product; it is simply a description of the security requirements. The occupational methodology and conditions for users of this product are not within Suraj Chemicals' awareness or control, and it is ultimately the responsibility of the user to take the necessary measures to obtain the legal requirements concerning the manipulation, storage, use and disposal of chemical products. The information on this safety data sheet only refers to this product, which should not be used for needs other than those specified.

END OF SAFETY DATA SHEET