

Tetrahydrofuran

Technical Data Sheet

July 1997

Formula: C₄H₈O
Molecular Weight: 72.1
Product Number: 583503
CAS Registry Number: ... 109-99-9

Product Specifications	Value	Test Method
Assay, % minimum	99.95	STI 8429
Water, % maximum	0.03	STI 8413
Color APHA, maximum	10	STI 8415
Suspended matter	none	STI 8412

Physical Properties

Melting point, °C	- 109
Boiling point, °C	66
Density @ 20°C, g/cm ³	0.88
Flash point, °C	- 20

Tetrahydrofuran (THF) is stabilized with approximately 0.025 weight percent of BHT (3,5-di-tert.-butyl-4-hydroxytoluene) to inhibit the formation of explosive-prone peroxides in autoxidation.

Without the stabilizer, peroxide formation could take place on prolonged storage or exposure to air or light.

Description

THF is a colorless, volatile cycloaliphatic ether with an odor characteristic of acetone. It is chemically neutral, highly polar and miscible with water. Synthetically derived THF is made by eliminating water from 1,4-butanediol.

THF has excellent solvent power for numerous organic substances. It is miscible with water and all common organic solvents.

Safety

THF is an eye irritant, making chemical splash goggles a necessity during handling. If accidental eye contact is made, flush for 15 minutes with water and contact an appropriate physician.

If accidentally ingested, do NOT induce vomiting; contact physician immediately.

THF vapor may cause nausea, dizziness, headache or blackout. Maintain sufficient fresh air flow.

Contact with skin necessitates thorough flushing with water to prevent irritation.

Always refer to the Material Safety Data Sheet (MSDS) for detailed information on safety.

Applications

As a resin solvent, THF is used in:

- flexographic inks for plastics
- coating deposition for audio and video tapes
- PVC and CPVC pipe cements
- polyurethane coatings
- PVC film casting (food packaging)

As a reaction solvent, THF can be used in:

- Grignard Reagent formation processes
- pharmaceutical steroids
- preparation of organometallic reagents

In addition, THF is also used as a reactant precursor for specialty derivatives:

- pyrrolidine (used in the pharmaceutical industry)
- polytetrahydrofuran (used in the plastic industry)

Packaging

Available in 4,000 gallon minimum tank trucks and 396 lb. (net weight) and 446 lb. (gross weight) non-returnable steel drums.

Storage & Handling

THF should be stored under dry nitrogen at a pressure of 30 mbar in order to avoid contact with air and the formation of peroxides or absorption of moisture.

Once a drum has been opened and some of its content has been removed, a limitation is automatically imposed on the shelf-life, even if the blanket of nitrogen is renewed. For this reason, the remaining contents of the drum should be used up as soon as possible.

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Storage & Handling (continued)

Small containers must be kept tightly closed and kept in a well-ventilated place.

THF is a highly flammable material and has been designated as a class flammable liquid by the NFPA. Therefore, THF should be prevented from coming into contact with an ignition source. A solution of THF and water is flammable down to a concentration of approximately 0.3%.

Dry chemical is the recommended portable extinguisher for extinguishing small fires. Alcohol based foam is the type recommended as a backup for target fires. CO₂ can be effective when used by a skilled fire fighter.

For more information on storage and handling, see the technical leaflet *Tetrahydrofuran dist. pure (THF)* or *Tetrahydrofuran Handling and Storage*.

Always refer to the Material Safety Data Sheet (MSDS) for detailed information on handling and disposal.

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