Section 1. Product and Company Identification

Product Name Tripropylene Glycol N-Butyl Ether
CAS Number 55934-93-5

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Section 2. Hazards Identification

Classification of the substance or mixture
This material is not hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29CFR 1910.1200.

Other hazards: No data available

Section 3. Composition / Information on Ingredients

Common Name Tripropylene Glycol N-Butyl Ether
Synonym(s) [(butoxymethylethoxy)methylethoxy]propan-1-ol
CAS Number 55934-93-5

COMPONENT	CAS NUMBER	CONCENTRATION
Tripropylene glycol monobutyl ether	55934-93-5	> 95.0%
Polypropylene glycol monobutyl ether	9003-13-8	< 4.0%
Tripropylene glycol	24800-44-0	< 1.9%
Dipropylene glycol n-butylether	29911-28-2	< 1.5%

Section 4. First Aid Measures

Description of first aid measures
General advice: If potential for exposure exists refer to Section 8 for specific personal protective equipment.
Inhalation: Move person to fresh air; if effects occur, consult a physician.
Skin contact: Wash off with plenty of water.
Eye contact: Flush eyes thoroughly with water for several minutes. Remove contact lenses after the initial 1-2 minutes and continue flushing for several additional minutes. If effects occur, consult a physician, preferably an ophthalmologist. Suitable emergency eye wash facility should be available in work area.
Ingestion: If swallowed, seek medical attention. Do not induce vomiting unless directed to do so by medical personnel.

Most important symptoms and effects, both acute and delayed: Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

Indication of any immediate medical attention and special treatment needed
Notes to physician: No specific antidote. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient.

Section 5. Firefighting Measures

Suitable extinguishing media: Water fog or fine spray. Dry chemical fire extinguishers. Carbon dioxide fire extinguishers. Foam. Alcohol resistant foams (ATC type) are preferred. General purpose synthetic foams (including AFFF) or protein foams may function, but will be less effective.
Unsuitable extinguishing media: Do not use direct water stream. May spread fire.

Special hazards arising from the substance or mixture
Hazardous combustion 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 and are not limited to: Carbon monoxide. Carbon dioxide.
Unusual Fire and Explosion Hazards: 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.

Advice for firefighters
Fire Fighting Procedures: Keep people away. Isolate fire and deny unnecessary entry. 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. Do not use direct water stream. May spread fire. Move container from fire area if this is possible without hazard. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage. Avoid accumulation of water. Product may be carried across water surface spreading fire or contracting an ignition source.
Special protective equipment for firefighters: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective firefighting clothing (includes firefighting helmet, coat, trousers, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

Section 6. Accidental Release Measures

Personal precautions, protective equipment and emergency procedures: Use appropriate safety equipment. For additional information, refer to Section 8, Exposure Controls and Personal Protection.

Environmental precautions: Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information.
Methods and materials for containment and cleaning up: Small spills: Absorb with materials such as: Sand. Vermiculite. Collect in suitable and properly labeled containers. Large spills: Contain spilled material if possible. Pump into suitable and properly labeled containers. See Section 13, Disposal Considerations, for additional information.

Section 7. Handling and Storage

Precautions for safe handling: Avoid contact with eyes. Wash thoroughly after handling. Spills of these organic materials on hot fibrous insulations may lead to lowering of the autoignition temperatures possibly resulting in spontaneous combustion.
Conditions for safe storage: Store in the following material(s): Carbon steel. Stainless steel. Phenolic lined steel drums. Do not store in: Aluminum. Copper. Galvanized iron. Galvanized steel. See Section 10 for more specific information.

Section 8. Exposure Controls / Personal Protection

Control parameters: Exposure limits are listed below, if they exist.
Dipropylene glycol n-butylether: TWA Aerosol - 10 mg/m^3

Exposure controls
Engineering controls: Use local exhaust ventilation, or other engineering controls to maintain airborne levels below exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, general ventilation should be sufficient for most operations. Local exhaust ventilation may be necessary for some operations.

Individual protection measures
Eye/face protection: Use chemical goggles. If exposure causes eye discomfort, use a full-face respirator.
Skin protection
Hand protection: Use gloves chemically resistant to this material when prolonged or frequently repeated contact could occur. Examples of preferred glove barrier materials include: Butyl rubber. Ethyl vinyl alcohol laminate ("EVAL"). Examples of acceptable glove barrier materials include: Natural rubber ("latex"). Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Polyvinyl chloride ("PVC" or "vinyl"). NOTICE: The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.
Other protection: Wear clean, body-covering clothing.

Respiratory protection: Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable 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. For most conditions no respiratory protection should be needed; however, if discomfort is experienced, use an approved air-purifying respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge.

Section 9. Physical and Chemical Properties

Appearance
Physical state: Liquid.
Color: Colorless
Odor: Mild
Odor Threshold: No test data available
pH: No test data available
Melting point/range: Not applicable
Freezing point: < -75°C (< -103°F) Literature
Boiling point (760 mm Hg): 275°C (527°F) at 760 mm Hg Measured
Flash point closed cup: 125.6°C (258.1°F) Setaflash Closed Cup ASTM D3828
Evaporation Rate (Butyl Acetate = 1): No test data available
Flammability (solid, gas): Not applicable to liquids
Lower explosion limit: No test data available
Upper explosion limit: No test data available
Vapor Pressure: < 0.01 mm Hg at 20 °C (68 °F) Literature
Relative Vapor Density (air = 1): > 6 Estimated.
Relative Density (water = 1): 0.930 at 25°C (77°F) / 25°C ASTM D891
Water solubility: 40.2 g/L at 25°C (77°F) OECD Test Guideline 107 or Equivalent
Partition coefficient: n-octanol/water: log Pow: 1.9 Estimated.
Auto-ignition temperature: 202°C (396°F) Estimated.
Decomposition temperature: No test data available
Dynamic Viscosity: 7.0 mPa.s at 25°C (77°F) ASTM D 445
Kinematic Viscosity: 8.79 mm^2/s at 20°C (68°F) Estimated.
Explosive properties: Not explosive
Oxidizing properties: no data available
Liquid Density: 0.9327 g/cm^3 at 20°C (68°F) Literature
Molecular weight: No data available
Particle size: Not applicable to liquids
NOTE: The physical data presented above are typical values and should not be construed as a specification.

Section 10. Stability and Reactivity

Reactivity: No data available
Chemical stability: Stable under recommended storage conditions. See Storage, Section 7.
Possibility of hazardous reactions: Polymerization will not occur.
Conditions to avoid: Do not distill to dryness. Product can oxidize at elevated temperatures. Generation of gas during decomposition can cause pressure in closed systems.
Incompatible materials: Avoid contact with: Strong acids. Strong bases. Strong oxidizers.
Hazardous decomposition products: Decomposition products depend upon temperature, air supply and the presence of other materials. Decomposition products can include and are not limited to: Aldehydes. Ketones. Organic acids.

Section 11. Toxicological Information

Toxicological information on this product or its components appear in this section when such data is available.

Acute toxicity
Acute oral toxicity: Low toxicity if swallowed. Small amounts swallowed incidentally as a result of normal handling operations are not likely to cause injury; however, swallowing larger amounts may cause injury. Observations in animals include: Incoordination. Tremors. Convulsions.
As product: Single dose oral LD50 has not been determined. Based on information for component(s): LD50, Rat, > 2,000 mg/kg Estimated.
Acute dermal toxicity: Prolonged skin contact is unlikely to result in absorption of harmful amounts.
As product: The dermal LD50 has not been determined. Based on information for component(s): LD50, Rat, > 2,000 mg/kg Estimated.
Acute inhalation toxicity
At room temperature, exposure to vapor is minimal due to low volatility; single exposure is not likely to be hazardous. For respiratory irritation and narcotic effects: No relevant data found.
As product: The LC50 has not been determined.

Skin corrosion/irritation: Prolonged contact may cause slight skin irritation with local redness.

Serious eye damage/eye irritation: May cause slight eye irritation. May cause slight temporary corneal injury. May cause lacrimation (tears). Effects are likely to heal readily.

Sensitization
For the major component(s): Did not cause allergic skin reactions when tested in guinea pigs.
For respiratory sensitization: No relevant data found.

Specific Target Organ Systemic Toxicity (Single Exposure): Available data are inadequate to determine single exposure specific target organ toxicity.

Specific Target Organ Systemic Toxicity (Repeated Exposure): Based on available data, repeated exposures are not anticipated to cause additional significant adverse effects.

Carcinogenicity: Similar material(s) did not cause cancer in laboratory animals.

Teratogenicity
For similar material(s): Did not cause birth defects or any other fetal effects in laboratory animals.

Reproductive toxicity
For similar material(s): In laboratory animal studies, effects on reproduction have been seen only at doses that produced significant toxicity to the parent animals.

Mutagenicity
For the major component(s): In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

Aspiration Hazard: Based on physical properties, not likely to be an aspiration hazard.

Components Influencing Toxicology
Tripropylene glycol monobutyl ether
Acute inhalation toxicity: At room temperature, exposure to vapor is minimal due to low volatility; single exposure is not likely to be hazardous.
For respiratory irritation and narcotic effects: No relevant data found.
As product: The LC50 has not been determined.
Polypropylene glycol monobutyl ether
Acute inhalation toxicity
As product: The LC50 has not been determined.
Tripropylene glycol
Acute inhalation toxicity
LC50, Rat, 8 Hour, vapor, > 0.083 mg/l No deaths occurred following exposure to a saturated atmosphere.
Dipropylene glycol n-butylether
Acute inhalation toxicity: Prolonged exposure is not expected to cause adverse effects. Based on the available data, narcotic effects were not observed. Based on the available data, respiratory irritation was not observed.
LC50, Rat, 4 Hour, dust/mist, > 2.04 mg/l No deaths occurred at this concentration.

Section 12. Ecological Information

Ecotoxicological information on this product or its components appear in this section when such data is available.

Toxicity

Acute toxicity to fish

For the major component(s): 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).
For the major component(s): LC50, Poecilia reticulata (guppy), semi-static test, 96 Hour, 564 mg/l, OECD Test Guideline 203 or Equivalent

Acute toxicity to aquatic invertebrates

For the major component(s): LC50, Daphnia magna (Water flea), static test, 48 Hour, > 1,000 mg/l, OECD Test Guideline 202 or Equivalent

Acute toxicity to algae/aquatic plants

For the major component(s): ErC50, Pseudokirchneriella subcapitata (green algae), static test, 5 d, Growth rate inhibition, 592 mg/l, OECD Test Guideline 201 or Equivalent

Persistence and degradability

Biodegradability

For the major component(s): Material is readily biodegradable. Passes OECD test(s) for ready biodegradability. Material is ultimately biodegradable (reaches > 70% mineralization in OECD test(s) for inherent biodegradability).
10-day Window: Pass
Biodegradation: 72%
Exposure time: 28 d
Method: OECD Test Guideline 301F or Equivalent

Bioaccumulative potential

Bioaccumulation

For the major component(s): Bioconcentration potential is low (BCF < 100 or Log Pow < 3).
Partition coefficient: n-octanol/water(log Pow): 1.9 at 20 °C Estimated.

Mobility in soil

For the major component(s): Potential for mobility in soil is very high (Koc between 0 and 50).
Partition coefficient(Koc): 10 - 22 Estimated.

Section 13. Disposal Considerations

Waste Treatment Methods: Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.

Section 14. Transport Information

DOT: Not regulated for transport

Classification for SEA transport (IMO-IMDG): Not regulated for transport
Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code: Consult IMO regulations before transporting ocean bulk

Classification for AIR transport (IATA/ICAO): Not regulated for transport

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

Section 15. Regulatory Information

OSHA Hazard Communication Standard: This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Sections 311 and 312: This product is not a hazardous chemical under 29CFR 1910.1200, and therefore is not covered by Title III of SARA.

Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Pennsylvania Worker and Community Right-To-Know Act: To the best of our knowledge, this product does not contain chemicals at levels which require reporting under this statute.

California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986): This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.

United States TSCA Inventory (TSCA): All components of this product are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

Section 16. Other Information

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

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