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THE POWER OF THREE³

PHARMCO-AAPER

AND COMMERCIAL ALCOHOLS

Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

MATERIAL SAFETY DATA SHEETS

Manufacturer: PHARMCO-AAPER
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Butyl Ether

1. CHEMICAL PRODUCT IDENTIFICATION

Product Name: Butyl Ether
Synonyms: Butane, 1,1'-oxybis-; n-Butylether; Dibutyl Ether, Di-n-butyl Ether
Molecular Weight: 130.2
Chemical Formula: C₄H₉OC₉H₉

2. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredient	CAS No	Percent	Hazardous
Butyl Ether	142-96-1	90 - 100%	Yes

3. HAZARDS IDENTIFICATION

WARNING! MAY FORM EXPLOSIVE PEROXIDES ON LONG STANDING. FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT CENTRAL NERVOUS SYSTEM.

NFPA Hazard Ratings: Health - 2, Flammability - 3, Reactivity - 1

NOTE: NFPA ratings involve data and interpretations that may vary from company to company. They are intended only for rapid, general identification of the magnitude of the specific hazard. To deal adequately with the safe handling of this material, all the information contained in this MSDS must be considered.

Potential Health Effects

Inhalation: Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Inhalation of high concentrations may affect the central nervous system and have a narcotic effect.

Ingestion: May be absorbed through the gastrointestinal tract; symptoms may parallel inhalation. Additional symptoms may include vomiting, stomach pain.

Skin Contact: Causes irritation to skin. Symptoms include redness, itching, and pain.

Eye Contact: Causes irritation, redness, and pain.

Chronic Exposure: No information found.

Aggravation of Pre-existing Conditions: No information found.

4. FIRST AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Ingestion: Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

Skin Contact: Wipe off excess material from skin then immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

5. FIRE FIGHTING MEASURES

Fire:

Flash point: 33C (91F) CC

Autoignition temperature: 194C (381F)

Flammable limits in air % by volume: lel: 1.5; uel: 7.6

Contact with strong oxidizers may cause fire. Vapors can flow along surfaces to distant ignition source and flash back.

Explosion: Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Sensitive to mechanical impact if explosive peroxides are formed. Sensitive to static discharge.

Fire Extinguishing Media: Dry chemical, alcohol foam or carbon dioxide. Water may be ineffective. Material floats on water and may travel back to an ignition source and spread fire.

Special Information: In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

6. ACCIDENTAL RELEASE MEASURES

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not

use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures.

7. HANDLING AND STORAGE

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Before distillation, check for peroxide, if reaction is positive, give due treatment. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. Do not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Limits: None established.

Ventilation System: 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. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details. Use explosion-proof equipment.

Personal Respirators (NIOSH Approved): For conditions of use where exposure to the substance is apparent, consult an industrial hygienist. For emergencies, or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

Skin Protection: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

Eye Protection: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear, colorless liquid.

Odor: Slight ethereal odor.

Solubility: Insoluble in water.

Specific Gravity: 0.77 @ 20C/4C

pH: No information found.

% Volatiles by volume @ 21C (70F): 100

Boiling Point: 142C (288F)

Melting Point: -98C (-144F)

Vapor Density (Air=1): 4.48

Vapor Pressure (mm Hg): 4.8 @ 20C (68F)

Evaporation Rate (BuAc=1): No information found.

10. STABILITY AND REACTIVITY

Stability: This substance can form peroxides, especially on long standing. Peroxide formation may occur in containers that have been opened and remain in storage. Peroxides can be detonated by friction, impact, or heating.

Hazardous Decomposition Products: Carbon dioxide and carbon monoxide may form when heated to decomposition.

Hazardous Polymerization: This substance does not polymerize.

Incompatibilities: Reacts violently with oxidizers.

Conditions to Avoid: Heat, flames, ignition sources and incompatibles.

11. TOXICOLOGICAL INFORMATION

Oral rat LD50: 7400 mg/kg; inhalation mouse LC50: 169 gm/m³/15-minutes; Skin rabbit LD50: 10 gm/kg; Irritation skin rabbit, standard Draize, 100 mg/24-hour, moderate.

-----\Cancer Lists\-----

Ingredient	--NTP Carcinogen--		IARC Category
	Known	Anticipated	
Butyl Ether (142-96-1)	No	No	None

12. ECOLOGICAL INFORMATION

Environmental Fate: When released into the soil, this material is not expected to leach into groundwater. When released into the soil, this material may evaporate to a moderate extent. When released to water, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life between 1 and 10 days. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life of less than 1 day.

Environmental Toxicity: This material is expected to be slightly toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l.

13. DISPOSAL CONSIDERATION

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

Domestic (Land, D.O.T.)
Proper Shipping Name: DIBUTYL ETHERS
Hazard Class: 3
UN/NA: UN1149
Packing Group: III

International (Water, I.M.O.)
Proper Shipping Name: DIBUTYL ETHERS

Hazard Class: 3.3
UN/NA: UN1149
Packing Group: III

15. REGULATORY INFORMATION

-----\Chemical Inventory Status - Part 1\-----
Ingredient TSCA EC Japan Australia
Butyl Ether (142-96-10) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----
 ----Canada----
Ingredient Korea DSL NDSL Phil.
Butyl Ether (142-96-1) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----
 --SARA 302-- -----SARA 313-----
Ingredient RQ TPQ List Chemical Catg.
Butyl Ether (142-96-1) No No No No

-----\Federal, State & International Regulations - Part 2\-----
Ingredient -RCRA- -TSCA-
Butyl Ether (142-96-1) 261.33 8(d)
 No No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No
SARA 311/312: Acute: Yes Chronic:No Fire:Yes Pressure: No
Reactivity: Yes (Pure/Liquid)

Australian Hazchem Code: 3[Y]
Poison Schedule: No information found.

16. OTHER INFORMATION

The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances.