Material Safety Data Sheet

Butyl cellosolve

Section 1 - Chemical Product

MSDS Name: Butyl cellosolve

Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
111-76-2	Butyl cellosolve (2-Butoxyethanol)	100	

Section 3 - Hazards Identification

Potential Acute Health Effects: Hazardous in case of skin contact (permeator), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant). Severe over-exposure can result in death.

Potential Chronic Health Effects: CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to blood, kidneys, liver, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Section 4 - First Aid Measures

Eye Contact: Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

Skin Contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used.Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

Serious Skin Contact: Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

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

Serious Inhalation: Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek medical attention. Ingestion: Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

Serious Ingestion: Not available.

Section 5 - Fire Fighting Measures

Flammability of the Product: Combustible.

Auto-Ignition Temperature: 244°C (471.2°F)

Flash Points: CLOSED CUP: 61°C (141.8°F). (Setaflash) OPEN CUP: 69.4°C (156.9°F) (TAG).

Flammable Limits: LOWER: 1.1% UPPER: 12.7%

Products of Combustion: These products are carbon oxides (CO, CO2)

Fire Hazards in Presence of Various Substances: Flammable in presence of open flames and sparks, of heat. Non-flammable in presence of shocks.

Explosion Hazards in Presence of Various Substances: Risks of explosion of the product in presence of mechanical impact: Not available Risks of explosion of the product in presence of static discharge: Not available.

Fire Fighting Media and Instructions: SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

Special Remarks on Fire Hazards: Not available.

Special Remarks on Explosion Hazards: Not available.

Section 6 - Accidental Release Measures

Small Spill: Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

Large Spill: . Combustible material. Poisonous liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

Section 7 - Handling and Storage

Precautions: Keep locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, alkalis.

Storage: Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Personal Protection: Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

Personal Protection in Case of a Large Spill: Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

Exposure Limits: TWA: 20 (ppm) from ACGIH (TLV) [United States] SKIN TWA: 24 (mg/m3) from NIOSH TWA: 5 (ppm) from NIOSH TWA: 240 (mg/m3) from OSHA (PEL) [United States] TWA: 50 (ppm) from OSHA (PEL) [United States]Consult local authorities for acceptable exposure limits.

Section 9 - Physical and Chemical Properties

Physical state and appearance: Liquid

Odor: Ethereal. Pleasant. (Slight.)

Taste: Not available.

Molecular Weight: 118.18 g/mole

Color: Colorless.

pH (1% soln/water): Not available

Boiling Point: 171.5°C (340.7°F)

Melting Point: -70°C (-94°F)

Critical Temperature: 367.78°C (694°F)

Specific Gravity: 0.9012 (Water = 1)

Vapor Pressure: 0.1 kPa (@ 20°C)

Vapor Density: 4.07 (Air = 1) p.

Volatility: Not available.

Odor Threshold: Not available.

Water/Oil Dist. Coeff.: The product is more soluble in oil; log(oil/water) = 0.8

Ionicity (in Water): Not available

Dispersion Properties: See solubility in water, diethyl ether.

Solubility: Soluble in diethyl ether. Partially soluble in cold water.

Section 10 - Stability and Reactivity

Stability: The product is stable.

Instability Temperature: Not available.

Conditions of Instability: Heat, ignition sources, incompatible materials

Incompatibility with various substances: Reactive with oxidizing agents, alkalis.

Corrosivity: Non-corrosive in presence of glass.

Special Remarks on Reactivity: Not available.

Special Remarks on Corrosivity: Not available.

Polymerization: Will not occur

Section 11 - Toxicological Information

Routes of Entry: Absorbed through skin. Eye contact. Inhalation.

Toxicity to Animals: WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 470 mg/kg [Rat]. Acute dermal toxicity (LD50): 220 mg/kg [Rabbit]. Acute toxicity of the vapor (LC50): 450 4 hours [Rat].

Chronic Effects on Humans: MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. May cause damage to the following organs: blood, kidneys, liver, central nervous system (CNS)

Other Toxic Effects on Humans: Hazardous in case of skin contact (permeator), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

Special Remarks on Toxicity to Animals: Not available.

Special Remarks on Chronic Effects on Humans: May cause adverse reproductive effects (maternal and paternal fertility, fetoxicity) based on animal data. May cause birth defects (teratogenic) based on animal data. May cause cancer (tumorigenic) based on animal data.

Special Remarks on other Toxic Effects on Humans: Acute Potential Health Effects: Skin: Causes skin irritation. Penetrates intact skin easily and can cause systemic effects and central nervous system depression (see inhalation). Eyes: Causes eye irritation. Inhalation: May cause irritation of the respiratory tract. May affect behavior (analgesia), behavior/central nervous system (headache, drowsiness, dizzness, stuttering, coma, weakness, ataxia, slurred speech, loss of coordination and judgement, personality changes, analgesia, blurred vision, tremor, excitement, somnolence), sense organs, the gastrointestinal tract (nausea, vomiting), metabolism (metabolic acidosis), respiration (dyspnea), urinary system (kidneys - hematuria, albuminuria, polyuria, oliguria, renal failure), liver (liver damage). Exposure to high vapor concentration may also cause corneal or lens opacity of the eyes. Ingestion: Causes gastrointestinal tract irritation with nausea, vomiting, diarrhea. May affect behavior/central nervous system (see inhalation), respiration (dyspnea), metabolism, cardiovascular system. Chronic Potential Health Effects: Inhalation and p. 5 Ingestion: Prolonged or repeated inhalation or ingestion may affect the liver, blood (changes in red blood cell count, pigmented or nucleated red blood cells, microcytosis with or without anemia, erythropenia, reticulocytosis, granulocytosis, leukocytosis), urinary system (kidneys -hematuria), metabolism (weight loss), endocrine system (spleen, thymus, pancreas). Prolonged or repeated inhalation of high concentrations may also cause lung hemmorrhage, congestion, bronchopneumonia.

Section 12 - Ecological Information

Ecotoxicity: Not available

BOD5 and COD: Not available

Products of Biodegradation: Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

Toxicity of the Products of Biodegradation: The products of degradation are less toxic than the product itself.

Special Remarks on the Products of Biodegradation: Not available.

Section 13 - Disposal Considerations

Waste Disposal: Waste must be disposed of in accordance with federal, state and local environmental control regulations.

Section 14 - Transport Information

DOT Classification: CLASS 6.1: Poisonous material.

Identification: : Toxic Liquid, organic, n.os.(Ethylene Glycol Monobutyl Ether) UNNA: 2810 PG: III

Special Provisions for Transport: Not available

Section 15 - Regulatory Information

Federal and State Regulations: Illinois toxic substances disclosure to employee act: 2-Butoxyethanol Rhode Island RTK hazardous substances: 2- Butoxyethanol Pennsylvania RTK: 2-Butoxyethanol Florida: 2-Butoxyethanol Minnesota: 2-Butoxyethanol Massachusetts RTK: 2-Butoxyethanol Massachusetts spill list: 2-Butoxyethanol New Jersey: 2-Butoxyethanol California Director's list of Hazardous Substances: 2-Butoxyethanol TSCA 8(b) inventory: 2-Butoxyethanol TSCA 8(d) H and S data reporting: 2-Butoxyethanol: Effective Date: 4/13/89; Sunset Date: 6/30/98

Other Regulations: OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

Other Classifications:

WHMIS (Canada): CLASS B-3: Combustible liquid with a flash point between 37.8°C (100°F) and 93.3°C (200°F). CLASS D-1A: Material causing immediate and serious toxic effects (VERY TOXIC). CLASS D-2B: Material causing other toxic effects (TOXIC)

DSCL (EEC):

HMIS (U.S.A.):

Health Hazard: 2

Fire Hazard: 2

Reactivity: 0

Personal Protection: h

National Fire Protection Association (U.S.A.):

Health: 2

Flammability: 2

Reactivity: 0

Specific hazard:

Protective Equipment: Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.