Materials Safety Data - BUTYL CELLOSOLVE*

*Union Carbide Trade Mark

Shipping Name
NOT REGULATED FOR TRANSPORT

Transport of Dangerous Goods Class
NOT REGULATED FOR TRANSPORT

WHMIS Class
B 3; D 1A; D 2B

Material Use
solvent, domestic cleaner, coupling agent in lubricants

1. HAZARDOUS INGREDIENTS

<table>
<thead>
<tr>
<th>CAS NUMBER</th>
<th>%</th>
<th>TWAEV (ppm)</th>
<th>LD₅₀ (mg/kg)</th>
<th>LC₅₀ ppm</th>
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<tbody>
<tr>
<td>111-76-2</td>
<td>100%</td>
<td>25 (skin)</td>
<td>300</td>
<td>220</td>
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<td>450</td>
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Ethylene Glycol Monobutyl Ether (also Butoxy Ethanol, or Glycol Ether EB)

2. PHYSICAL CHARACTERISTICS

Odour & Appearance
clear colourless liquid with mild pleasant odour (odour is familiar from household cleaners)

Odour Threshold
0.1ppm – 0.5ppm

Vapour Pressure
0.76 mmHg or 0.101 kPa @ 20°C; 300 mmHg (140°C)

Vapour Density (air = 1)
4.1

Boiling Point
171°C

Freezing Point
-70°C

Specific Gravity
0.902 (20°C)

Water Solubility
complete - also soluble in many organic solvents

3. FLAMMABILITY & REACTIVITY

Flash Point
67.8°C

Autoignition Temperature
238°C

Flammable Limits
1.1% - 10.6%

Hazardous Combustion Products
carbon monoxide, nitrogen oxides

Firefighting Precautions
foam, dry chemical, water fog, water spray only to cool, product floats on water - water jet spreads flames; firefighters must wear SCBA

Sensitivity to Static Discharge
not sensitive

Sensitivity to Mechanical Impact
not sensitive

Chemical Stability
stable; will not polymerize

Reactive With
strong oxidizing agents; strong acids or alkalies

Dangerous Decomposition Products
may form explosive peroxides on exposure to air and light

4. TOXICOLOGY

EFFECTS OF ACUTE EXPOSURE

Skin Contact
defatting, drying, mildly irritating

Skin Absorption
yes toxic by this route

Eye Contact
liquid very irritating, vapour irritating; may cause inflammation, pain & permanent damage

Inhalation
very toxic by inhalation; irritating; nasal discharge, chest pain, coughing, nausea, dizziness

Ingestion
drowsiness, headache

Intoxication, metabolic
burning sensation in mouth, throat, stomach; dizziness, drowsiness, acidosis, renal damage & respiratory failure were reported in 2 cases of deliberate ingestion
(Butyl Cellosolve, cont’d)

EFFECTS OF CHRONIC EXPOSURE

General experimental haemolytic agent in rodents - caused blood in urine & reduction in red cells (anaemia) – no such effect reported in humans

Sensitising no

Carcinogenic no evidence of carcinogenic or tumorigenic effect in animals or in humans

Reproductive Effect an experimental mutagen and teratogen in rodents exposed to product vapour, affecting musculoskeletal and cardiovascular development in rodents; no known effect in humans

Carcinogenicity & reproductive toxicity of this product had been assumed from the properties of glycol ethers EM & EE. EB does not follow this pattern.

Synergistic With not known

Estimated LD$_{50}$ 300 mg/kg (oral, rabbit), 470 mg/kg (oral, rat), 1200 mg/kg (oral, mouse & guinea pig)

Estimated LC$_{50}$ 220 mg/kg (skin, rabbit & guinea pig)

NOTE: LD$_{50}$ & LC$_{50}$ vary widely between species. Indications are that human toxicity may be lower than the above suggests.

5. PROTECTIVE EQUIPMENT

Hands butyl rubber, “Viton”, or “Saranex” gloves

Eyes safety glasses with side shields or chemical goggles (face shield recommended if splashing is possible)

Respirator not required if ventilation is adequate (see TWAEV, (1) above)

Clothing impervious (hands, above) apron, boots, long sleeves, if splashing is anticipated

6. ENVIRONMENT

Leak Precaution dyke to control spillage and prevent environmental contamination

Handling Spill ventilate contaminated area; recover free liquid with explosion-proof pumps; absorb residue on an inert sorbent (dry sand, earth) and store in closed containers for disposal

Waste Disposal do not flush to sewer; may be incinerated in approved facility

7. STORAGE & HANDLING

Store and use in a cool dry environment, away from sources of ignition, heat and oxidising agents. Use with adequate ventilation. Ground the container before handling to prevent static discharge, which may cause ignition. Do not cut, drill, weld or grind on or near this container - vapour inside may ignite and explode. Explosive peroxides may form on exposure to air - if prolonged storage of a part drum is anticipated, flush headspace with nitrogen prior to sealing. NOTE: This product is more toxic than most other common solvents. “Skin” designation attached to TWAEV means that vapour or liquid may be absorbed through the skin, adding to total body burden. Avoid prolonged contact with skin and wash work clothes frequently. An eye bath and safety shower should be available near the workplace.

8. FIRST AID

SKIN: Wash with soap and plenty of water. Remove contaminated clothing. Do not reuse until thoroughly laundered.

EYES: Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if any irritation.

INHALATION: Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.

INGESTION: Give plenty of water to dilute product. Do not induce vomiting (see below). Keep victim quiet. If vomiting occurs, keep victim’s head below the hips to prevent inhalation of vomited material. Contact Poison Control Centre (800) 668-8205 and seek medical help promptly.
NOTE: Inadvertent inhalation of vomited material may seriously damage the lungs. The risk and danger of this is greater than the risk of poisoning through absorption of this product. The stomach should be emptied under medical supervision, after the installation of an airway to protect the lungs.