Butanol, Reagent Grade

SECTION 1 : Identification of the substance/mixture and of the supplier

Product name: Butanol, Reagent Grade

Manufacturer/Supplier Trade name:

Manufacturer/Supplier Article number: S25209

Recommended uses of the product and uses restrictions on use:

Manufacturer Details:
AquaPhoenix Scientific
9 Barnhart Drive, Hanover, PA 17331

Supplier Details:
Fisher Science Education
15 Jet View Drive, Rochester, NY 14624

Emergency telephone number:
Fisher Science Education    Emergency Telephone No.: 800-535-5053

SECTION 2 : Hazards identification

Classification of the substance or mixture:

- **Flammable**
  Flammable liquids, category 3

- **Irritant**
  Acute toxicity (oral, dermal, inhalation), category 4
  Skin irritation, category 2
  Specific target organ toxicity following single exposure, category 3

- **Corrosive**
  Serious eye damage, category 1

Flam. Liq. 3
Acute Tox. 4
Skin Irrit. 2
Eye Dam. 1
STOT SE 3

**Signal word** : Danger

**Hazard statements:**
Flammable liquid and vapour
Harmful if swallowed
Causes skin irritation
Causes serious eye damage
May cause respiratory irritation

**Precautionary statements:**
If medical advice is needed, have product container or label at hand
Keep out of reach of children
Read label before use
Keep away from heat/sparks/open flames/hot surfaces. No smoking
Avoid breathing dust/fume/gas/mist/vapours/spray
Use only outdoors or in a well-ventilated area
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof electrical/ventilating/light/equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Wear protective gloves/protective clothing/eye protection/face protection
Wash skin thoroughly after handling
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
In case of fire: Use agents recommended in section 5 for extinction
Specific treatment (see supplemental first aid instructions on this label)
Take off contaminated clothing and wash before reuse
IF ON SKIN: Wash with soap and water
If skin irritation occurs: Get medical advice/attention
Call a POISON CENTER or doctor/physician if you feel unwell
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing
Store in a well ventilated place. Keep container tightly closed
Store locked up
Dispose of contents and container to an approved waste disposal plant

Other Non-GHS Classification:

WHMIS

B2

D2B

NFPA/HMIS

NFPA SCALE (0-4)

HMIS RATINGS (0-4)

SECTION 3 : Composition/information on ingredients

<table>
<thead>
<tr>
<th>Ingredients:</th>
<th>Butanol</th>
<th>&gt;99 %</th>
</tr>
</thead>
</table>

Percentages are by weight

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SECTION 4 : First aid measures

Description of first aid measures

**After inhalation:** Loosen clothing as necessary and position individual in a comfortable position. Move exposed to fresh air. Give artificial respiration if necessary. If breathing is difficult give oxygen. Get medical assistance if cough or other symptoms appear.

**After skin contact:** Rinse/flush exposed skin gently using soap and water for 15-20 minutes. Seek medical advice if discomfort or irritation persists.

**After eye contact:** Protect unexposed eye. Rinse/flush exposed eye(s) gently using water for 15-20 minutes. Remove contact lens(es) if able to do so during rinsing. Seek medical attention if irritation persists or if concerned.

**After swallowing:** Rinse mouth thoroughly. Do not induce vomiting. Seek medical attention if irritation, discomfort, or vomiting persists.

Most important symptoms and effects, both acute and delayed:

Indication of any immediate medical attention and special treatment needed:
If seeking medical attention provide SDS document to physician. Physician should treat symptomatically.

SECTION 5 : Firefighting measures

Extinguishing media

**Suitable extinguishing agents:** Use water, dry chemical, chemical foam, carbon dioxide, or alcohol-resistant foam.

**For safety reasons unsuitable extinguishing agents:**

Special hazards arising from the substance or mixture:
Oxides of carbon. Flash back possible over considerable distance. Thermal decomposition can lead to release of irritating gases and vapors.

Advice for firefighters:

**Protective equipment:** Wear protective eyeware, gloves, and clothing. Refer to Section 8. Use NIOSH-approved respiratory protection/breathing apparatus.

**Additional information (precautions):** Avoid inhaling gases, fumes, dust, mist, vapor, and aerosols. Avoid contact with skin, eyes, and clothing.

SECTION 6 : Accidental release measures

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Ensure that air-handling systems are operational.

Environmental precautions:

Should not be released into environment. Prevent from reaching drains, sewer, or waterway.

Methods and material for containment and cleaning up:

Wear protective eyeware, gloves, and clothing. Refer to Section 8. Always obey local regulations. Containerize for disposal. Refer to Section 13. If necessary use trained response staff or contractor. Evacuate personnel to safe areas. Keep in suitable closed containers for disposal.

Reference to other sections:

SECTION 7 : Handling and storage

Precautions for safe handling:

Avoid contact with skin, eyes, and clothing. Follow good hygiene procedures when handling chemical materials.
Butanol, Reagent Grade

Refer to Section 8. Follow proper disposal methods. Refer to Section 13. Do not eat, drink, smoke, or use personal products when handling chemical substances.

**Conditions for safe storage, including any incompatibilities:**

Store in a cool location. Keep away from food and beverages. Protect from freezing and physical damage. Provide ventilation for containers. Keep container tightly sealed. Store away from incompatible materials.

**SECTION 8: Exposure controls/personal protection**

**Control Parameters:**

71-36-3, Butanol, ACGIH TLV TWA 20 ppm  
71-36-3, Butanol, OHSA PEL TWA 300.0 mg/m³  
71-36-3, Butanol, NIOSH TWA 150.0 mg/m³

**Appropriate Engineering controls:** Emergency eye wash fountains and safety showers should be available in the immediate vicinity of use or handling. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapor and mists below the applicable workplace exposure limits (Occupational Exposure Limits-OELs) indicated above.

**Respiratory protection:** Not required under normal conditions of use. Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. When necessary use NIOSH approved breathing equipment.

**Protection of skin:** Select glove material impermeable and resistant to the substance. Select glove material based on rates of diffusion and degradation. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Use proper glove removal technique without touching outer surface. Avoid skin contact with used gloves. Wear protective clothing.

**Eye protection:** Wear equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses or goggles are appropriate eye protection.

**General hygienic measures:** Perform routine housekeeping. Wash hands before breaks and at the end of work. Avoid contact with skin, eyes, and clothing. Before wearing wash contaminated clothing.

**SECTION 9: Physical and chemical properties**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Appearance (physical state,color):</strong></td>
<td>Clear, colorless liquid.</td>
</tr>
<tr>
<td><strong>Explosion limit lower:</strong></td>
<td>Not Determined</td>
</tr>
<tr>
<td><strong>Explosion limit upper:</strong></td>
<td>Not Determined</td>
</tr>
<tr>
<td><strong>Odor:</strong></td>
<td>Alcohol</td>
</tr>
<tr>
<td><strong>Vapor pressure:</strong></td>
<td>6.7 mm Hg</td>
</tr>
<tr>
<td><strong>Odor threshold:</strong></td>
<td>Not Determined</td>
</tr>
<tr>
<td><strong>Vapor density:</strong></td>
<td>2.6</td>
</tr>
<tr>
<td><strong>pH-value:</strong></td>
<td>Not Determined</td>
</tr>
<tr>
<td><strong>Relative density:</strong></td>
<td>0.81</td>
</tr>
<tr>
<td><strong>Melting/Freezing point:</strong></td>
<td>116 C</td>
</tr>
<tr>
<td><strong>Solubilities:</strong></td>
<td>Slightly in water.</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Boiling point/Boiling range</th>
<th>- 89.5 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partition coefficient (n-octanol/water)</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Flash point (closed cup)</td>
<td>35 °C</td>
</tr>
<tr>
<td>Auto/Self-ignition temperature</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>0.46</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Flammability (solid, gaseous)</td>
<td>Not Determined</td>
</tr>
<tr>
<td>Viscosity</td>
<td>a. Kinematic: Not Determined</td>
</tr>
<tr>
<td>Density</td>
<td>Not Determined</td>
</tr>
</tbody>
</table>

SECTION 10 : Stability and reactivity

Reactivity: Nonreactive under normal conditions.
Chemical stability: Stable under normal conditions.
Possible hazardous reactions: None under normal processing.
Conditions to avoid: Incompatible materials.
Incompatible materials: Hazardous decomposition products:

SECTION 11 : Toxicological information

Acute Toxicity:
Oral: 790 mg/kg LD50 rat:
Inhalation: 8000 ppm/4H LC50 rat:
Chronic Toxicity: No additional information.
Corrosion Irritation: No additional information.
Sensitization: No additional information.
Single Target Organ (STOT): No additional information.
Numerical Measures: No additional information.
Carcinogenicity: No additional information.
Mutagenicity: No additional information.
Reproductive Toxicity: No additional information.

SECTION 12 : Ecological information

Ecotoxicity
LC50 - Pimephales promelas (fathead minnow): 1,840 mg/l - 96 h
EC50 - Daphnia magna (Water flea): 1,983 mg/l - 48 h
Persistence and degradability:
Bioaccumulative potential: Bioconcentration factor (BCF): 0.38. Bioaccumulation Oncorhynchus mykiss (rainbow trout) - 24 h - 921 mg/l
Mobility in soil:
SECTION 13 : Disposal considerations

Waste disposal recommendations:
Contact a licensed professional waste disposal service to dispose of this material. Dispose of empty containers as unused product. Product or containers must not be disposed with household garbage. It is the responsibility of the waste generator to properly characterize all waste materials according to applicable regulatory entities (US 40CFR262.11). Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations. Ensure complete and accurate classification.

SECTION 14 : Transport information

UN-Number
1120

UN proper shipping name
Butanols

Transport hazard class(es)
Class:
3 Flammable liquids

Packing group: III

Environmental hazard:

Transport in bulk:

Special precautions for user:

SECTION 15 : Regulatory information

United States (USA)

SARA Section 311/312 (Specific toxic chemical listings):
Acute, Chronic, Fire

SARA Section 313 (Specific toxic chemical listings):
71-36-3 Butanol

RCRA (hazardous waste code):
None of the ingredients is listed

TSCA (Toxic Substances Control Act):
All ingredients are listed.

CERCLA (Comprehensive Environmental Response, Compensation, and Liability Act):
None of the ingredients is listed

Proposition 65 (California):

Chemicals known to cause cancer:
None of the ingredients is listed

Chemicals known to cause reproductive toxicity for females:
None of the ingredients is listed

Chemicals known to cause reproductive toxicity for males:
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None of the ingredients is listed

Chemicals known to cause developmental toxicity:
None of the ingredients is listed

Canada

Canadian Domestic Substances List (DSL):
All ingredients are listed.

Canadian NPRI Ingredient Disclosure list (limit 0.1%):
None of the ingredients is listed

Canadian NPRI Ingredient Disclosure list (limit 1%):
None of the ingredients is listed

SECTION 16 : Other information

This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations. Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control, we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations applicable to this material.

GHS Full Text Phrases:

Abbreviations and acronyms:
IMDG: International Maritime Code for Dangerous Goods
PNEC: Predicted No-Effect Concentration (REACH)
CFR: Code of Federal Regulations (USA)
SARA: Superfund Amendments and Reauthorization Act (USA)
RCRA: Resource Conservation and Recovery Act (USA)
TSCA: Toxic Substances Control Act (USA)
NPRI: National Pollutant Release Inventory (Canada)
DOT: US Department of Transportation
IATA: International Air Transport Association
GHS: Globally Harmonized System of Classification and Labelling of Chemicals
ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstracts Service (division of the American Chemical Society)
NFPA: National Fire Protection Association (USA)
HMIS: Hazardous Materials Identification System (USA)
WHMIS: Workplace Hazardous Materials Information System (Canada)
DNEL: Derived No-Effect Level (REACH)

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