1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product code: US025
Product Name: BUTYL ALCOHOL, UNISOLV(R), HPLC
Chemical Name: Butyl alcohol
Synonyms:
- 1-Butanol
- 1-Butyl alcohol
- 1-Hydroxybutane
- Alcool butylique (French)
- Butan-1-ol
- Butanol
- Butyl hydroxide
- Butyric or normal primary butyl alcohol
- Hemostyp
- Methylolpropane
- n-Butan-1-ol
- n-Butanol
- n-Butyl alcohol
- Propylcarbinol
- Propylmethanol

Recommended use:

CAS #:
71-36-3

Formula:
CH3(CH3)3OH

RTECS #
EO1400000

CI#:
Not available

Supplier:
Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At:
https://www.spectrumchemical.com

Emergency Telephone Number:
CHEMTREC: 1-800-424-9300

Contact Person:
Regina Wachenheim (East Coast)

Contact Person:
Martin LaBenz (West Coast)
2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
WARNING! FLAMMABLE LIQUID AND VAPOR
Can burn with an invisible flame
WARNING! IRRITANT
Irritating to eyes
Irritating to skin
Irritating to respiratory system
May be harmful if swallowed

Product code: US025

OSHA Regulatory Status
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)

POTENTIAL HEALTH EFFECTS

Principal Routes of Exposure:
Ingestion. Skin. Eyes. Inhalation.

Acute Potential Health Effects:

Skin Contact:
Contact causes skin irritation. Moderately irritating to the skin. It may be absorbed through the skin. If absorbed through skin it may cause systemic effects with symptoms similar to those of ingestion.

Eye Contact:
Causes eye irritation. Severe eye irritation. Possible eye damage.

Inhalation:
Irritating to respiratory system. Causes conjunctival irritation. May cause nausea and vomiting. Inhalation of vapors may cause dizziness or suffocation. May cause central nervous system effects. May affect respiration. May affect the liver. It may affect the blood.

Ingestion:
May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting, and diarrhoea. May cause gastritis. It may affect the kidneys. May affect the liver. May affect the blood. May affect respiration. May affect the cardiovascular system.

Chronic Potential Health Effects:

Carcinogen Status:
No information available

Target Organs:

Mutagenic Effects:
No information available

Teratogenic Effects:
There is limited and equivocal evidence that Butyl alcohol is a teratogen in animals. It has not been shown to cause teratogenic effects in humans.

Product name: BUTYL ALCOHOL, UNISOLV(R), HPLC
Aggravated Medical Conditions: No information available

See Section 11 for additional Toxicological Information

POTENTIAL ENVIRONMENTAL EFFECTS

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>71-36-3</td>
<td>100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General Advice: Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eye with water for 15 minutes. Get medical attention.

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

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Notes to Physician: Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flammable Properties

Flashpoint (°C/°F): 37 °C/98 °F

Flash Point Tested according to: Closed cup

Lower Explosion Limit (%): 1.4%
Upper Explosion Limit (%): 11.2%

Autoignition Temperature (°C/°F): 343 °C/650 °F

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Alcohol-resistant foam. Water spray.

Unsuitable Extinguishing Media: Do not use a solid (straight) water stream as it may scatter and spread fire.

Hazardous Combustion Products: Carbon monoxide; Carbon dioxide
Specific hazards:  
Flammable  
May be ignited by heat, sparks or flames  
Material can burn with invisible flame  
Vapor may travel considerable distance to source of ignition and flash back  
Vapors may form explosive mixtures with air  
Most vapors are heavier than air. They will spread along the ground and collect in low or confined areas (sewers, basements, tanks)  
Container explosion may occur under fire conditions or when heated  
Fire may produce irritating, corrosive and/or toxic gases  

Special Protective Equipment for Firefighters:  
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear  

Specific Methods:  
Water mist may be used to cool closed containers. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions:  
Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition. Pay attention to flashback. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use spark-proof tools and explosion-proof equipment. In case of large spill, water spray or vapor suppressing foam may be used to reduce vapors, but may not prevent ignition in closed spaces.

Environmental Precautions:  
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Prevent entry into waterways, sewers, basements or confined areas. In case of large spill, dike if needed. Dike far ahead of liquid spill for later disposal.

Methods for Cleaning Up:  
Absorb spill with inert material (e.g. vermiculite, dry sand or earth), then place in a suitable chemical waste container. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Handling

Technical Measures/Precautions:  
Provide sufficient air exchange and/or exhaust in work rooms. Remove all sources of ignition. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Keep away from incompatible materials.

Safe Handling Advice:  
Wear personal protective equipment. Use only in well-ventilated areas. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Do not breathe vapors or spray mist. Do not ingest. When using do not smoke. Handle in accordance with good industrial hygiene and safety practice.

Storage

Product code: US025  
Product name: BUTYL ALCOHOL, UNISOLV(R), HPLC
Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Keep away from heat and sources of ignition. Store in a segregated and approved area. Store away from incompatible materials.

Incompatible Materials:

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure: Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.

Personal Protective Equipment

Eye protection: Goggles. Safety glasses with side-shields.

Skin and body protection: Chemical resistant apron. Long sleeved clothing. Gloves.

Respiratory protection: Vapor respirator. Be sure to use an approved/certified respirator or equivalent.

Hygiene measures: Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

National occupational exposure limits

United States

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol - 71-36-3</td>
<td>100 ppm TWA</td>
<td>50 ppm Ceiling</td>
<td>20 ppm TWA</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td>300 mg/m³ TWA</td>
<td>150 mg/m³ Ceiling</td>
<td></td>
<td></td>
</tr>
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</table>

Canada

<table>
<thead>
<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol 71-36-3</td>
<td>20 ppm TWA</td>
<td>15 ppm TWA</td>
<td>20 ppm TWA</td>
<td>50 ppm Ceiling</td>
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<tr>
<td></td>
<td>60 mg/m³ TWA</td>
<td>30 ppm Ceiling</td>
<td></td>
<td>152 mg/m³ Ceiling</td>
</tr>
</tbody>
</table>

Australia and Mexico

<table>
<thead>
<tr>
<th>Components</th>
<th>Australia</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol 71-36-3</td>
<td>None</td>
<td>50 ppm Peak</td>
</tr>
</tbody>
</table>

9. PHYSICAL AND CHEMICAL PROPERTIES
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Liquid.

Appearance: No information available

Color: Clear. Colorless.


Molecular/Formula weight: 74.12

Taste: Dry, burning taste.

Flash point (°C): 37

Autoignition Temperature (°C/°F): 343 °C/650 °F

Melting point/range(°C/°F): -89.8 °C/-129.64 °F

Boiling point/range(°C/°F): 117 °C/343 °F

pH: No information available

Decomposition temperature(°C/°F): No information available

Density (g/cm3): No information available

Evaporation rate: 0.46 (butyl acetate = 1)

Vapor pressure @ 20°C (kPa): No information available

Odor threshold (ppm): 0.83

Partition coefficient (n-octanol/water): 0.88

Solubility: Soluble in Water
Solubility in water: 63.2 g/L @ 25 °C

Autoignition Temperature (°C/°F): 343 °C/650 °F

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions


Hazardous decomposition products: Carbon monoxide. Carbon dioxide. When heated to decomposition it emits acrid smoke and irritating fumes.

Possibility of Hazardous Reactions: It may react with aluminum at temperatures above 49 degrees C (120 degrees F)

Polymerization: Hazardous polymerisation does not occur

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

Butyl Alcohol - 71-36-3

Product code: US025 Product name: BUTYL ALCOHOL, UNISOLV(R), HPLC
Product Information

**LC50/inhalation/rat** = 8000 ppm Inhalation LC50 Rat 4 h
**LC50/inhalation/mouse** = No information available

**LD50/dermal/rabbit** = 3400 mg/kg

**LD50/dermal/rat** = No information available

**LD50/oral/mouse** = 100 mg/kg
**LD50/oral/rat** = 790 mg/kg

**Local Effects**

**Skin irritation:**
Causes skin irritation. Moderate skin irritation.

**Eye irritation:**
Causes eye irritation. Severe eye irritation. Causes lacrimation. May cause conjunctival irritation. May cause blurred vision. May cause inflammation of the cornea. Possible eye damage.

**Inhalation:**
Irritating to respiratory system. Symptoms may include coughing and shortness of breath. Symptoms may include coughing and wheezing. May affect respiration (respiratory depression). May cause conjunctival irritation. May cause nausea, vomiting. May cause headache. Inhalation of high concentrations of vapors may cause dizziness or suffocation. May affect behavior/central nervous system (dizziness, somnolence, muscle weakness, ataxia). It may affect the liver. It may affect the blood (changes in serum composition). It may affect the blood (changes in white blood cell count, changes in other cell count).

**Ingestion:**
May be harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhoea. May cause gastritis. May affect the cardiovascular system (change in heart rate). It may affect the liver (fatty liver degeneration). May affect urinary system (kidneys). May affect the blood. May affect respiration (shortness of breath).

**Sensitization:**
No information available

**Chronic Toxicity**

**LD50/oral/rat** = 790 mg/kg Oral LD50 Rat (LOLI and RTECS)
4360 mg/kg (RTECS)
**LD50/oral/mouse** = 100 mg/kg (RTECS)

**LD50/dermal/rat** = 3400 mg/kg
**LC50/inhalation/rat** = 8000 ppm Inhalation LC50 Rat 4 h
**LC50/inhalation/mouse** = No information available

**Other LD50 or LC50 information** =
3484 mg/kg Oral LD50 Rabbit (RTECS)
1200 mg/kg Oral LD50 Hamster (RTECS)
1782 mg/kg Oral LD50 Dog (RTECS)
Chronic Toxicity

Prolonged or repeated skin contact may cause dermatitis, and dryness and cracking of the skin. Prolonged or repeated inhalation of high concentrations may cause hearing impairment, with auditory nerve damage and vestibular system injury, and severe vertigo (diagnosed as Meniere’s disease). Prolonged or repeated inhalation may affect the brain. Prolonged or repeated inhalation may affect the liver. Prolonged or repeated inhalation may affect the kidneys. Prolonged or repeated ingestion may affect behavior/central nervous system (somnolence, ataxia, muscle weakness). Prolonged or repeated ingestion may affect the blood (changes in red blood cell count). Prolonged or repeated inhalation may affect the adrenal gland. Prolonged or repeated ingestion may affect the adrenal gland.

Carcinogenic effects:
Not considered carcinogenic

<table>
<thead>
<tr>
<th>Components</th>
<th>NTP</th>
<th>IARC</th>
<th>OSHA HCS - Carcinogens</th>
<th>ACGIH - Carcinogens</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Mutagenic Effects:
No information available

Reproductive Effects:
May cause adverse developmental effects based on animal data
Possible risk of harm to the unborn child
No information on developmental toxicity effects on humans was found

Teratogenic Effects:
There is limited and equivocal evidence that Butyl alcohol is a teratogen in aminals. It has not been shown to cause teratogenic effects in humans.

Target Organs:
Skin, Eyes, Central nervous system, Kidneys, Liver, Hearing, Auditory nerve, Respiratory system.

12. ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to terrestrial and aquatic plants and animals:
Information given is based on data on the components and the ecotoxicology of similar products

Ecotoxicity effects:
Aquatic environment.

Aquatic toxicity:

Butyl Alcohol - 71-36-3

Freshwater Algae Data:
500 mg/L EC50 Desmodesmus subspicatus 72 h
500 mg/L EC50 Desmodesmus subspicatus 96 h

Freshwater Fish Species Data:
100000-500000 µg/L LC50 Lepomis macrochirus 96 h static 1
1730-1910 mg/L LC50 Pimephales promelas 96 h static 1
1740 mg/L LC50 Pimephales promelas 96 h flow-through 1
1910000 µg/L LC50 Pimephales promelas 96 h static 1

Water Flea Data:
1897 - 2072 mg/L EC50 Daphnia magna 48 h
1983 mg/L EC50 Daphnia magna 48 h

Mobility:
It is expected to have high mobility in soil.

Persistence and degradability:
Readily biodegradable

Bioaccumulative potential:
Potential for bioconcentration in aquatic organisms is low.
13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>J031 Ignitable waste</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

DOT
- UN-No: UN1120
- Proper Shipping Name: Butanols
- Hazard Class: 3
- Packing Group: III
- Subsidiary Risk: Not applicable
- Marine Pollutant: No data available
- ERG No: 129
- DOT RQ (lbs): No information available
- Symbol(s): R5

TDG (Canada)
- UN-No: UN1120
- Proper Shipping Name: Butanols
- Hazard Class: 3
- Packing Group: III
- Subsidiary Risk: No information available
- Description: No information available

ADR
- UN-No: UN1120
- Proper Shipping Name: Butanols
- Hazard Class: 3
- Packing Group: III
- Subsidiary Risk: No information available
- Classification Code: No information available
- Description: No information available
- CEFIC Tremcard No: No information available

IMO / IMDG
- UN-No: UN1120
- Proper Shipping Name: Butanols
- Hazard Class: 3
- Packing Group: III
- Subsidiary Risk: No information available
- Description: No information available
- IMDG Page: No information available
- Marine Pollutant: No information available
- EMS: F-E
- MFAG: No information available
- Maximum Quantity: No information available

RID

Product code: US025  
Product name: BUTYL ALCOHOL, UNISOLV(R), HPLC
15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>U.S. TSCA</th>
<th>Philippines (PICCS)</th>
<th>KOREA KECL 03867</th>
<th>Japan ENCS 2-3049</th>
<th>CHINA Present</th>
<th>Australia (AICS) Present</th>
<th>EINECS-No. Present 200-751-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>Present</td>
<td>Present</td>
<td>Present KE-03867</td>
<td>2-3049</td>
<td>Present</td>
<td>Present</td>
<td>Present 200-751-6</td>
</tr>
</tbody>
</table>

U.S. Regulations

Butyl Alcohol
- Massachusetts RTK: Present
- New Jersey RTK Hazardous Substance List: Present
- New Jersey (EHS) List: Present
- New Jersey - Discharge Prevention - List of Hazardous Substances: Present
- Pennsylvania RTK: Present
- Minnesota - Hazardous Substance List: Present
- New York Release Reporting - List of Hazardous Substances: 5000 lb RQ, 1 lb RQ
- Louisiana Reportable Quantity List for Pollutants: Listed
- California Directors List of Hazardous Substances: Present


Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>
CERCLA/SARA

<table>
<thead>
<tr>
<th>Components</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>5000 lb final RQ 2270 kg final RQ</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>1.0 % de minimis concentration</td>
</tr>
</tbody>
</table>

U.S. TSCA

<table>
<thead>
<tr>
<th>Components</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

Canada

WHMIS hazard class:
B2  Flammable liquid
D2B  Toxic materials

Butyl Alcohol
B2  D2B

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

<table>
<thead>
<tr>
<th>Components</th>
<th>WHMIS Ingredient Disclosure List -</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>1 %</td>
</tr>
</tbody>
</table>

Inventory

<table>
<thead>
<tr>
<th>Components</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>Present</td>
<td>Not Listed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Manditory Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

EU Classification

R-phrase(s)
R10 - Flammable.
R22 - Harmful if swallowed.
R41 - Risk of serious damage to eyes.
R67 - Vapors may cause drowsiness and diziness.
R37/38 - Irritating to respiratory system and skin.
**S -phrase(s)**
S7 - Keep container tightly closed.
S9 - Keep container in a well-ventilated place.
S13 - Keep away from food, drink and animal feedingstuffs.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37 - Wear suitable gloves.
S39 - Wear eye/face protection.
S46 - If swallowed, seek medical advice immediately and show this container or label.

<table>
<thead>
<tr>
<th>Components</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Butyl Alcohol</td>
<td>R10 Xn; R22 Xi; R37/38-41 R67</td>
<td>No information</td>
<td>S2 S7/9 S13 S26 S37/39 S46</td>
</tr>
</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

**Indication of danger:**
Xn - Harmful.
Xi - Irritant.

![Xn](image1) ![Xi](image2)

**16. OTHER INFORMATION**

The MSDS format complies with ANSI Z400.1/Z129.1-2010 standards.

**Preparation Date:** 08-Nov-2013

**Reason for revision:** Not applicable

**Prepared by:** Sonia Owen

**Literature reference:** No information available

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. The physical properties reported in this MSDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

**Product code:** US025  
**Product name:** BUTYL ALCOHOL, UNISOLV(R), HPLC