# SAFETY DATA SHEET

## 1. Identification

**Product identifier** **3-Methyl-1-butanol**

**Other means of identification**

**Catalog number** 1424153

**CAS number** 123-51-3

**Synonyms** Isoamyl alcohol; Isopentanol

**Chemical name** 3-Methyl-1-butanol

**Recommended use** For analytical laboratory use only.

**Recommended restrictions** Not for use as a drug. Not for administration to humans or animals.

**Manufacturer/Importer/Supplier/Distributor information**

**Manufacturer**

**Company name** U. S. Pharmacopeia

**Address** 12601 Twinbrook Parkway
Rockville
MD
20852-1790
United States

**Telephone** Technical Services 301-816-8129

**Website** www.usp.org

**E-mail** RSTECH@usp.org

**Emergency phone number** CHEMTREC within US & Canada 1-800-424-9300
CHEMTREC outside US & Canada +1 703-527-3887

## 2. Hazard(s) identification

| | | |
|---|---|---|
| **Physical hazards** | Flammable liquids | Category 3 |
| **Health hazards** | Acute toxicity, oral | Category 4 |
| | Skin corrosion/irritation | Category 2 |
| | Serious eye damage/eye irritation | Category 2A |

**Environmental hazards** Not classified.

**OSHA defined hazards** Not classified.

**Label elements**

**Signal word** Warning

**Hazard statement** Flammable liquid and vapor. Harmful if swallowed. Causes skin irritation. Causes serious eye irritation.

**Precautionary statement**

**Prevention** Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Keep container tightly closed. Use explosion-proof electrical/ventilating/lighting equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Wash thoroughly after handling. Wear protective gloves/eye protection/face protection.

**Response** If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse. In case of fire: Use appropriate media to extinguish.

| | |
|---|---|
| **Storage** | Store in a well-ventilated place. Keep cool. |
| **Disposal** | Dispose of contents/container in accordance with local/regional/national/international regulations. |
| **Hazard(s) not otherwise classified (HNOC)** | None known. |
| **Supplemental information** | None. |

## 3. Composition/information on ingredients

**Substance**

| Chemical name | Common name and synonyms | CAS number | % |
|---|---|---|---|
| 3-Methyl-1-butanol | Isoamyl alcohol; Isopentanol | 123-51-3 | 100 |

Information provided in the SDS is not specific to the lot provided. Refer to the label and USP Certificate/Product Information Sheet for the assigned value of a particular lot.

## 4. First-aid measures

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|---|---|
| **Inhalation** | If breathing is difficult, remove to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist. |
| **Skin contact** | Take off immediately all contaminated clothing. Rinse skin with water/shower. Get medical attention if irritation develops and persists. Wash contaminated clothing before reuse. |
| **Eye contact** | Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops and persists. |
| **Ingestion** | If ingestion of a large amount does occur, call a poison control center immediately. Rinse mouth. Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. |
| **Most important symptoms/effects, acute and delayed** | Irritant effects. |
| **Indication of immediate medical attention and special treatment needed** | Provide general supportive measures and treat symptomatically. Thermal burns: Flush with water immediately. While flushing, remove clothes which do not adhere to affected area. Call an ambulance. Continue flushing during transport to hospital. |
| **General information** | Remove from exposure. Remove contaminated clothing. For treatment advice, seek guidance from an occupational health physician or other licensed health-care provider familiar with workplace chemical exposures. In the United States, the national poison control center phone number is 1-800-222-1222. If person is not breathing, give artificial respiration. If breathing is difficult, give oxygen if available. Persons developing serious hypersensitivity (anaphylactic) reactions must receive immediate medical attention. |

## 5. Fire-fighting measures

| | |
|---|---|
| **Suitable extinguishing media** | Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). |
| **Unsuitable extinguishing media** | Do not use water jet as an extinguisher, as this will spread the fire. |
| **Specific hazards arising from the chemical** | By heating and fire, harmful vapors/gases may be formed. |
| **Special protective equipment and precautions for firefighters** | Wear suitable protective equipment. |
| **Fire fighting equipment/instructions** | In case of fire and/or explosion do not breathe fumes. Move containers from fire area if you can do so without risk. |
| **Specific methods** | Use standard firefighting procedures and consider the hazards of other involved materials. |
| **General fire hazards** | Flammable liquid and vapor. |

## 6. Accidental release measures

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|---|---|
| **Personal precautions, protective equipment and emergency procedures** | Keep unnecessary personnel away. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Wear appropriate personal protective equipment. Avoid inhalation of vapors. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. For personal protection, see section 8 of the SDS. |
| **Methods and materials for containment and cleaning up** | Absorb spillage with suitable absorbent material. Remove sources of ignition. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Clean surface thoroughly to remove residual contamination. For waste disposal, see section 13 of the SDS. |
| **Environmental precautions** | Avoid discharge into drains, water courses or onto the ground. |

## 7. Handling and storage

**Precautions for safe handling**
As a general rule, when handling USP materials, avoid all contact and inhalation of dust, mists, and/or vapors associated with the material. Clean equipment and work surfaces with suitable detergent or solvent after use. After removing gloves, wash hands and other exposed skin thoroughly. Select and use containment devices and personal protective equipment based on a risk assessment of material potency and exposure potential.

**Conditions for safe storage, including any incompatibilities**
Store in tight container. This material should be handled and stored per label instructions to ensure product integrity.

## 8. Exposure controls/personal protection

**Occupational exposure limits**

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit. At this time, the other constituents have no known exposure limits.

**US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)**

| Material | Type | Value |
|---|---|---|
| 3-Methyl-1-butanol (CAS 123-51-3) | PEL | 360 mg/m3 |
| | | 100 ppm |

**US. ACGIH Threshold Limit Values**

| Material | Type | Value |
|---|---|---|
| 3-Methyl-1-butanol (CAS 123-51-3) | STEL | 125 ppm |
| | TWA | 100 ppm |

**US. NIOSH: Pocket Guide to Chemical Hazards**

| Material | Type | Value |
|---|---|---|
| 3-Methyl-1-butanol (CAS 123-51-3) | STEL | 450 mg/m3 |
| | | 125 ppm |
| | TWA | 360 mg/m3 |
| | | 100 ppm |

**Biological limit values**
No biological exposure limits noted for the ingredient(s).

**Appropriate engineering controls**
For laboratory operations, use good technique and limit open handling. Control exposures to below the occupational exposure level (if available). Select and use containment devices and personal protective equipment based on a risk assessment of exposure potential. Cover all containers for solutions and slurries while being transferred.

**Individual protection measures, such as personal protective equipment**

**Eye/face protection**
Wear safety glasses with side shields, chemical splash goggles, or full face shield, if necessary. Base the choice of protection on the job activity and potential for contact with eyes or face. An emergency eye wash station should be available.

**Skin protection**

**Hand protection**
Wear nitrile or other impervious gloves if skin contact is possible. When the material is dissolved or suspended in an organic solvent, wear gloves that provide protection against the solvent.

**Other**
Wear lab coat. Base the choice of skin protection on the job activity, potential for skin contact and solvents and reagents in use. Do not wear protective garments in common areas (e.g., cafeterias) or out-of-doors.

**Respiratory protection**
Respirators are generally not required for laboratory operations. Choose respiratory protection appropriate to the task and the level of existing engineering controls.

**Thermal hazards**
Wear appropriate thermal protective clothing, when necessary.

**General hygiene considerations**
Handling practices in this SDS are recommendations for laboratory use of USP materials.

## 9. Physical and chemical properties

**Appearance**
Appearance descriptions are general information and not specific to any USP lot.

**Physical state**
Liquid.

**Form**
Liquid.

**Color**
Colorless.

| | |
|---|---|
| **Odor** | Strong disagreeable odor. |
| **Odor threshold** | 25 mg/m3 |
| **pH** | Not available. |
| **Melting point/freezing point** | -178.6 °F (-117 °C) |
| **Initial boiling point and boiling range** | 266 °F (130 °C) |
| **Flash point** | 109.4 °F (43.0 °C)<br>113.0 °F (45.0 °C) Open Cup |
| **Evaporation rate** | 0.03 (diethyl ether=1) |
| **Flammability (solid, gas)** | Not applicable. |
| **Upper/lower flammability or explosive limits** | |
| **Flammability limit - lower (%)** | 1.2 % |
| **Flammability limit - upper (%)** | 9 % at 100 °C |
| **Explosive limit - lower (%)** | Not available. |
| **Explosive limit - upper (%)** | Not available. |
| **Vapor pressure** | 2.37 mm Hg at 25 ° C |
| **Vapor density** | 3.04 (air=1) |
| **Relative density** | Not available. |
| **Solubility(ies)** | |
| **Solubility (water)** | Slightly soluble. |
| **Solubility (other)** | Alcohol: Miscible.<br>Ether: Miscible.<br>Benzene: Miscible.<br>Chloroform: Miscible.<br>Petroleum ether: Miscible.<br>Glacial acetic acid: Miscible.<br>Acetone: Very soluble. |
| **Partition coefficient (n-octanol/water)** | 1.16 - 1.28 |
| **Auto-ignition temperature** | 662 °F (350 °C) |
| **Decomposition temperature** | Not available. |
| **Viscosity** | Not available. |
| **Other information** | |
| **Chemical family** | Alcohol. |
| **Dynamic viscosity** | 3.74 mPa.s (77 °F (25 °C)) |
| **Kinematic viscosity** | 5.32 mm2/s (68 °F (20 °C)) |
| **Molecular formula** | C5H12O |
| **Molecular weight** | 88.15 |
| **Percent volatile** | 100 % |
| **Specific gravity** | 0.81 at 15 °C |
| **Surface tension** | 24.77 mN/m (59 °F (15 °C)) |
| **VOC** | 100 % |

## 10. Stability and reactivity

| | |
|---|---|
| **Reactivity** | The product is stable and non-reactive under normal conditions of use, storage and transport. |
| **Chemical stability** | Material is stable under normal conditions. |
| **Possibility of hazardous reactions** | No dangerous reaction known under conditions of normal use. |
| **Conditions to avoid** | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Contact with incompatible materials. |
| **Incompatible materials** | Strong oxidizing agents. Reducing agents. Caustics. Isocyanates. Strong acids. Aliphatic amines. |

**Hazardous decomposition products** Irritating and/or toxic fumes or gases. Emits toxic fumes under fire conditions.

## 11. Toxicological information

**Information on likely routes of exposure**

**Inhalation** Knowledge about health hazard is incomplete.

**Skin contact** Causes skin irritation.

**Eye contact** Causes serious eye irritation.

**Ingestion** Harmful if swallowed.

**Symptoms related to the physical, chemical and toxicological characteristics** Coughing. Shortness of breath. Nausea. Vomiting. Diarrhea. Visual disturbances. Headache. Unconsciousness. Dizziness. Weakness. Delirium. Dry, cracked skin. Irritation of eyes. Skin irritation.

**Information on toxicological effects**

**Acute toxicity** Harmful if swallowed.

| Product | Species | Test Results |
|---|---|---|
| 3-Methyl-1-butanol (CAS 123-51-3) | | |
| **Oral** | | |
| LD50 | Rat | 1300 mg/kg |
| **Acute** | | |
| **Dermal** | | |
| LD50 | Rabbit | 3216 mg/kg, 24 Hours |

**Skin corrosion/irritation** Causes skin irritation.

**Serious eye damage/eye irritation** Causes serious eye irritation.

**Local effects**

Irritancy test
Result: Irritant.
Species: Rabbit
Organ: Eye.
Irritancy test
Result: Irritant.
Species: Rabbit
Organ: Skin.

**Respiratory or skin sensitization**

**Respiratory sensitization** Knowledge about sensitization hazard is incomplete.

**Skin sensitization** Knowledge about health hazard is incomplete.

**Germ cell mutagenicity** Knowledge about mutagenicity is incomplete.

**Mutagenicity**

Mutagenicity test in Chinese hamster V-79 cells
Result: Negative.
S. typhimurium Ames assay
Result: Negative.

**Carcinogenicity** Knowledge about carcinogenicity is incomplete.

Carcinogenicity study
Result: Increase incidence of malignant tumors.
Species: Rat

**IARC Monographs. Overall Evaluation of Carcinogenicity**

Not listed.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)**

Not listed.

**US. National Toxicology Program (NTP) Report on Carcinogens**

Not listed.

**Reproductive toxicity** Knowledge about health hazard is incomplete.

**Reproductivity**

Reproductivity study
Result: Studies in rats and rabbits exposed via prenatal inhalation showed no increase in the incidence of embryotoxicity or fetotoxicity.

**Specific target organ toxicity - single exposure** Knowledge about health hazard is incomplete.

**Specific target organ toxicity - repeated exposure** Knowledge about health hazard is incomplete.

**Aspiration hazard** Knowledge about health hazard is incomplete.

## 12. Ecological information

**Ecotoxicity** The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

**Persistence and degradability** No data is available on the degradability of this product.

**Bioaccumulative potential**

**Octanol/water partition coefficient log Kow**
1.16 - 1.28

**Mobility in soil** No data available.

**Other adverse effects** The product contains volatile organic compounds which have a photochemical ozone creation potential.

## 13. Disposal considerations

**Disposal instructions** Dispose in accordance with all applicable regulations. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste.

**Local disposal regulations** Dispose in accordance with all applicable regulations.

**Hazardous waste code** D001: Waste Flammable material with a flash point <140 F
The waste code should be assigned in discussion between the user, the producer and the waste disposal company.

**Waste from residues / unused products** Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

**Contaminated packaging** Since emptied containers may retain product residue, follow label warnings even after container is emptied.

## 14. Transport information

**DOT**

| | |
|---|---|
| **UN number** | UN1105 |
| **UN proper shipping name** | Pentanols |
| **Transport hazard class(es)** | |
| **Class** | 3 |
| **Subsidiary risk** | - |
| **Packing group** | III |
| **Packaging exceptions** | None |
| **Packaging non bulk** | 203 |
| **Packaging bulk** | 242 |

**IATA**

| | |
|---|---|
| **UN number** | UN1105 |
| **UN proper shipping name** | Pentanols |
| **Transport hazard class(es)** | |
| **Class** | 3 |
| **Subsidiary risk** | - |
| **Packing group** | III |
| **Other information** | |
| **Passenger and cargo aircraft** | Allowed with restrictions. |
| **Cargo aircraft only** | Allowed with restrictions. |

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** Not established.

**DOT**


**IATA**


**General information** It is the shipper's responsibility to determine the correct transport classification at the time of shipment.

## 15. Regulatory information

**US federal regulations** All components are on the U.S. EPA TSCA Inventory List.

CERCLA/SARA Hazardous Substances - Not applicable.
This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

**Toxic Substances Control Act (TSCA)**

**TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)**

Not regulated.

**CERCLA Hazardous Substance List (40 CFR 302.4)**

Not listed.

**SARA 304 Emergency release notification**

Not regulated.

**OSHA Specifically Regulated Substances (29 CFR 1910.1001-1053)**

Not listed.

**Superfund Amendments and Reauthorization Act of 1986 (SARA)**

**SARA 302 Extremely hazardous substance**

Not listed.

**SARA 311/312 Hazardous chemical** Yes

**Classified hazard categories**
Flammable (gases, aerosols, liquids, or solids)
Acute toxicity (any route of exposure)
Skin corrosion or irritation
Serious eye damage or eye irritation

**SARA 313 (TRI reporting)**

Not regulated.

**Other federal regulations**

**Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List**

Not regulated.

**Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)**

Not regulated.

**Safe Drinking Water Act (SDWA)** Not regulated.

**FEMA Priority Substances Respiratory Health and Safety in the Flavor Manufacturing Workplace**

3-Methyl-1-butanol (CAS 123-51-3) Other Flavoring Substances with OSHA PEL's

**US state regulations** California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

**International Inventories**

| Country(s) or region | Inventory name | On inventory (yes/no)* |
|---|---|---|
| Australia | Australian Inventory of Chemical Substances (AICS) | Yes |
| Canada | Domestic Substances List (DSL) | Yes |
| Canada | Non-Domestic Substances List (NDSL) | No |
| China | Inventory of Existing Chemical Substances in China (IECSC) | Yes |
| Europe | European Inventory of Existing Commercial Chemical Substances (EINECS) | Yes |
| Europe | European List of Notified Chemical Substances (ELINCS) | No |
| Japan | Inventory of Existing and New Chemical Substances (ENCS) | Yes |
| Korea | Existing Chemicals List (ECL) | Yes |
| New Zealand | New Zealand Inventory | Yes |
| Philippines | Philippine Inventory of Chemicals and Chemical Substances (PICCS) | Yes |
| Taiwan | Taiwan Chemical Substance Inventory (TCSI) | Yes |
| United States & Puerto Rico | Toxic Substances Control Act (TSCA) Inventory | Yes |

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

## 16. Other information, including date of preparation or last revision

**Issue date** 02-09-2006

**Revision date** 10-11-2021

**Version #** 03

**Disclaimer** USP materials are sold for analytical laboratory use only, and NOT for human consumption. The information contained herein is applicable solely to the chemical substance when used for analytical laboratory use and does not necessarily relate to any other use of the substance described, (i.e. at different concentrations, in drug dosage forms, or in bulk quantities). USP materials are intended for use by persons having technical skill and at their own discretion and risk. This information has been developed by USP staff from sources considered reliable but has not been independently verified by the USP. Therefore, the USP Convention cannot guarantee the accuracy of the information in these sources nor should the statements contained herein be considered an official expression. NO REPRESENTATION OR WARRANTY, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE is made with respect to the information contained herein.