

# Material Safety Data Sheet



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## 1. IDENTIFICATION OF THE SUBSTANCE / PREPARATION AND THE COMPANY / UNDERTAKING

Commercial Product Name:

tert-Butanol; 2-Methyl-2-propanol; tert-Butyl-alcohol.

Company:

metabion international AG  
Lena-Christ-Str. 44/I  
82152 Planegg - Martinsried  
Telephone: +49-89-899363 0  
Telefax: +49-89-899363 11  
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Centre for detoxification:

## 2. CHEMICAL CHARACTERISATION / INFORMATION ON CONSTITUENTS

Formula: C<sub>4</sub>H<sub>10</sub>O

MW: 74.12 g/mol

Purity: > ACS grade

Description: colourless liquid

Melting point: 23 - 26 °C

## 3. HAZARDS IDENTIFICATION

Hazardous description: Highly flammable. Harmful by inhalation.

Information concerning particular hazards for human and environment: F; Xn

Classification system: RTECS: EO1925000

## 4. FIRST AID MEASURES

Avoid all direct contact.

Always contact physician.

Inhalation: If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.

After contact with skin: Wash off with soap and plenty of water. Consult a physician.

After contact with eyes: Flush thoroughly with water for at least 15 min. Consult a physician.

After ingestion: Contact physician.

Never induce vomiting or give liquids to someone who is unconscious or cannot swallow. Rinse mouth with water. Consult a physician.

## 5. FIRE-FIGHTING MEASURES

Fire and explosion hazards: Flash back possible over considerable distance.

Flash Point: 11 °C – closed cup.

Means of extinguishing: Use material suitable and appropriate to surrounding fire conditions.

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Extinguishing media: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Fire fighting procedures: Wear self contained breathing apparatus for fire fighting if necessary.

Further information: In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray to cool unopened containers.

## 6. ACCIDENTAL RELEASE MEASURES

Avoid all direct contact.

Respiratory protection: Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas (EU).

Protective gloves: Impermeable

Eye protection: Laboratory safety glasses

Other protective equipment: Normal laboratory apparel

Measures for environmental protection: Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Measures for cleaning/collection if a spill occurs: Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations.

## 7. HANDLING AND STORAGE

### Handling:

Information for safe handling: Avoid inhalation of vapour or mist. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Information about fire: Risk of explosion or fire.

### Storage:

Information about storage conditions: Store in cool place. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Personal protective equipment: The usual precautionary measures are to be adhered to when handling chemicals. Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection: Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.

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Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Protection of hands: The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it. Handle with gloves.

Eye protection: Laboratory safety glasses

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Form and color: Liquid, colourless

Melting point / range: 23 – 26 °C

Boiling point / range: 83 °C

Flash point: 11 °C – closed cup

Igniting temperature: 480 °C

Lower explosion limit: 2.4 % (V)

Upper explosion limit: 8 % (V)

Vapour pressure: 41 hPa at 20 °C; 59 hPa at 26 °C.

Density: 0.775 g/mL at 25 °C.

Relative vapour density: 2.56 – (Air = 1.0).

Solubility in water: completely miscible

## 10. STABILITY AND REACTIVITY

Storage stability: stable under recommended storage conditions.

Condition to be avoided: Heat, flames and sparks.

Dangerous reactions: Avoid strong oxidizing agents, Copper, Alkali metals, Aluminum.

Dangerous decomposition: Hazardous decomposition products formed under fire conditions. – Carbon oxides, Peroxides.

## 11. TOXICOLOGICAL INFORMATION

Acute toxicity

LD50 Oral - rat - 2.743 mg/kg

Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Lacrimation. Respiratory disorder Gastrointestinal:Other changes.

LC50 Inhalation - rat - 4 h - > 10000 ppm

Remarks: Behavioral:Ataxia. Lungs, Thorax, or Respiration:Dyspnea. Lungs, Thorax, or Respiration:Pulmonary emboli.

LD50 Dermal - rabbit - > 2.000 mg/kg

Remarks: Prolonged skin contact may cause skin irritation and/or dermatitis.

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## Irritation and corrosion

Skin - rabbit - Mild skin irritation - 24 h

Eyes - rabbit - Severe eye irritation - 24 h

## Sensitisation

no data available

## Chronic exposure

This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

## Signs and Symptoms of Exposure

drying, cracking of the skin, skin irritation.

## Potential Health Effects

Inhalation: Harmful if inhaled. May cause respiratory tract irritation.

Skin: May be harmful if absorbed through skin. May cause skin irritation.

Eyes: May cause eye irritation.

Ingestion: May be harmful if swallowed.

Target: Organs Central nervous system, Kidney, Liver, Bladder, Thyroid.

## Additional Information

RTECS: EO1925000

## 12. ECOLOGICAL INFORMATION

Elimination information (persistence and degradability)

Biodegradability: Zahn-Wellens Test. Result: > 99,9 % - Readily biodegradable.

## Ecotoxicity effects

Toxicity to fish: LC50 - Pimephales promelas (fathead minnow) - 6.140 mg/l -96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna (Water flea) - 933 mg/l - 48 h

## Further information on ecology

no data available

## 13. DISPOSAL CONSIDERATIONS

**Product:**

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Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

### **Contaminated packaging:**

Dispose of as unused product

## **14. TRANSPORT INFORMATION**

### **Land transport ADR/RID (cross-border)**

UN-Number: 1120. Class: 3. Packing group: II

Proper shipping name: BUTANOLS

### **Maritime transport IMDG**

UN-Number: 1120. Class: 3. Packing group: II. EMS-No: F-E, S-D

Proper shipping name: BUTANOLS

Marine pollutant: No

### **Air transport ICAO-TI and IATA-DGR**

UN-Number: 1120. Class: 3. Packing group: II

Proper shipping name: Butanols

## **15. REGULATORY INFORMATION**

Labelling according to EC Directives

EC Label

Hazard symbols

F Highly flammable

Xn Harmful

R-phrases(s)

R11 Highly flammable.

R20 Harmful by inhalation.

S-phrases(s)

S 9 Keep container in a well-ventilated place.

S16 Keep away from sources of ignition - No smoking.

## **16. OTHER INFORMATION**

The information provided herein is based on sources believed to be reliable as of May 01, 2009 and pertains only to the material designated. Metabion international AG makes no warranty or representation to its completeness, accuracy, or currency. This material is intended for use by persons with pertinent technical

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skills and at their discretion and risk. It is the responsibility of the user to determine the product's suitability for its intended use, the product's safe use, and the product's proper disposal. Disposal of hazardous material may be subject to local laws or regulations. Not for drug use!