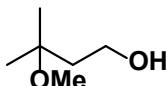


SECTION 1: Identification
1.1. Identification

Product form : Substance
 Trade name : MMB
 CAS-No. : 56539-66-3
 Formula : C₆H₁₄O₂
 Synonyms : Butan-1-ol, 3-methyl-3-methoxy- / 3-Methoxy-3-methyl-1-butanol / 3-Methoxy-3-methylbutan-1-ol / Butanol, 3-methoxy-3-methyl / 3-Methoxy-3-methyl-butanol / 3-Methyl-3-methoxybutanol / Aliphatic propylene glycol ethers / METHOXYMETHYLBUTANOL

Chemical structure :


1.2. Recommended use and restrictions on use

No additional information available

1.3. Supplier
Manufacturer:

Kuraray Co., Ltd.
 Isoprene Chemicals Division, Chemicals Marketing and Sales Dept.
 Tokiwabashi Tower 2-6-4, Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan
 TEL +81-3-6701-1623 FAX +81-3-6701-1646

Supplier:

Kuraray America, Inc.
 3700 Bay Area Boulevard, Suite 680, Houston, Texas 77058, USA
 TEL +1-281-283-1790

1.4. Emergency telephone number

Emergency number : For chemical emergency spill, leak, fire, exposure or accident
 Call CHEMTREC day or night
 Within USA and Canada: 1-800-424-9300 CCN706984 or +1 703-527-3887 (collect calls accepted)

SECTION 2: Hazard(s) identification
2.1. Classification of the substance or mixture
GHS-US classification

Flammable liquids Category 4	H227	Combustible liquid
Serious eye damage/eye irritation Category 2B	H320	Causes eye irritation

2.2. GHS Label elements, including precautionary statements
GHS-US labeling

Signal word (GHS-US) : Warning
 Hazard statements (GHS-US) : H227 - Combustible liquid
 H320 - Causes eye irritation
 Precautionary statements (GHS-US) : P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
 P264 - Wash hands, forearms and face thoroughly after handling.
 P280 - Wear protective gloves/protective clothing/eye protection/face protection.
 P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P337+P313 - If eye irritation persists: Get medical advice/attention.
 P370+P378 - In case of fire: Use media other than water to extinguish.
 P403+P235 - Store in a well-ventilated place. Keep cool.
 P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

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SECTION 3: Composition/Information on ingredients

3.1. Substances

Name	Product identifier	%	GHS-US classification
3-Methoxy-3-methyl-1-butanol	(CAS-No.) 56539-66-3	>= 98	Flammable liquids Cat. 4 Eye irritation Cat. 2B

3.2. Mixtures

Not applicable

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures after inhalation	: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Turn victim's head towards side, if victim is breathing and vomiting. If you feel unwell, seek medical advice.
First-aid measures after skin contact	: Remove affected clothing and wash all exposed skin area with mild soap and water, followed by warm water rinse. Get medical advice/attention.
First-aid measures after eye contact	: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.
First-aid measures after ingestion	: If accidentally swallowed rinse the mouth with plenty of water (only if the person is conscious) and obtain immediate medical attention. Never give anything by mouth to an unconscious person or a person with cramps. Keep at rest.

4.2. Most important symptoms and effects (acute and delayed)

No additional information available

4.3. Immediate medical attention and special treatment, if necessary

No additional information available

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media	: Water spray/ Atomized water / Alcohol resistant foam / Dry extinguishing powder/Carbon dioxide. Dry sand.
Unsuitable extinguishing media	: High volume water jet (it may spread the fire)

5.2. Specific hazards arising from the chemical

No additional information available

5.3. Special protective equipment and precautions for fire-fighters

Firefighting instructions	: In case of fire: Stop leak if safe to do so. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Evacuate area. Prevent fire-fighting water from entering environment.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures	: Wear personal protective equipment. Remove persons to safety. Provide adequate ventilation. Isolate from fire, if possible, without unnecessary risk. Use special care to avoid static electric charges.
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6.1.1. For non-emergency personnel

No additional information available

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent spread over a wide area (e.g. by containment or oil barriers). Do not allow to enter into surface water or drains.

6.3. Methods and material for containment and cleaning up

For containment	: Collect spillage. Collect in closed containers for disposal.
Methods for cleaning up	: This material and its container must be disposed of in a safe way, and as per local legislation. Small quantities of liquid spill: take up in non-combustible absorbent material and shovel into container for disposal.

6.4. Reference to other sections

No additional information available

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SECTION 7: Handling and storage

7.1. Precautions for safe handling

- Precautions for safe handling : Provide good ventilation in process area to prevent formation of vapor. Use personal protective equipment as required. Do not handle until all safety precautions have been read and understood.
- Hygiene measures : Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reuse.

7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Use only non-sparking tools. If local exhaust ventilation is not possible or not sufficient, the entire working area must be ventilated by technical means. provide eye wash and label its location conspicuously. Comply with applicable regulations.
- Storage conditions : Protect from sunlight. Store in a well-ventilated place. Store in a place accessible by authorized persons only. Keep locked up. Keep container closed when not in use. Ensure adequate ventilation of the storage area. Keep in fireproof place. Keep cool.
- Incompatible products : Alkalis. Strong bases. Strong acids. Oxidizing agent.
- Storage area : Store in a well-ventilated place.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

3-Methoxy-3-methyl-1-butanol (56539-66-3)

Not applicable

8.2. Appropriate engineering controls

- Appropriate engineering controls : Devices with local exhaust. provide sufficient washing facilities.

8.3. Individual protection measures/Personal protective equipment

Hand protection:

Protective gloves. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

Eye protection:

Framed glasses. Chemical goggles or face shield.

Skin and body protection:

Protective clothing: Lab coat. Lab apron. Chemical resistant suit. Safety shoes.

Respiratory protection:

In case of inadequate ventilation wear respiratory protection.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

- Physical state : Liquid
- Color : Colorless
- Odor : No data available
- pH : Not applicable
- Melting point : < -50 °C
- Boiling point : 173 °C
- Flash point : 68 °C (Tag closed tester) / 71 °C (closed cup) *2
- Relative evaporation rate (butyl acetate=1) : No data available
- Flammability (solid, gas) : No data available
- Vapor pressure : 0.47 hPa (20 °C) *1
- Relative vapor density at 20 °C : 4.1 (Air=1)
- Relative density : 0.91 g/cm3 (20 °C) *2
- Solubility : miscible in all proportions with water
- Log Pow : No data available
- Auto-ignition temperature : 395 °C
- Decomposition temperature : No data available
- Viscosity, kinematic : No data available

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Viscosity, dynamic	: 12.5 mPa · s (20 °C) OECD114 *2
Explosion limits	: 1.2 - 13.1 vol %
Explosive properties	: No data available
Oxidizing properties	: No data available

9.2. Other information

Minimum ignition energy	: No data available
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SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Overheating. Sparks. Open flame. Direct sunlight.

10.5. Incompatible materials

Oxidizing agents, strong. Reducing agents, strong. Peroxides.

10.6. Hazardous decomposition products

Carbon monoxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral)	: LD50 (rat): 4400 mg/kg (GLP)*3 LD50 (mouse): 5830 mg/kg *4
Acute toxicity (dermal)	: LD50 (rat): > 2000 mg/kg (GLP) *5 LD50 (mouse): > 2000 mg/kg *4
Skin corrosion/irritation	: No irritant (rabbit) *5
Serious eye damage/irritation	: Moderate irritating (rabbit) *5
skin sensitization	: No evidence of skin sensitization. (Guinea-pig) *5
Respiratory sensitization	: No data available
Germ cell mutagenicity	: Ames test: Negative *3 Chromosomal aberration test (CHO cells): Negative *6
Carcinogenicity	: No data available
Reproductive toxicity	: No effects on fertility of male and female parents and on each of the indices for development/growth of pups were evident. (Species: rat, applied dose: 250, 500, 2000 mg/kg bw/day, GLP compliance) *7
Specific target organ toxicity – single exposure	: No data available
Specific target organ toxicity – repeated exposure	: <28days Repeat Dose Oral toxicity (rat)> *6 MMB cause reversible effects mainly on the liver and kidney in the test. NOEL (male) 60 mg/kg/day NOEL(female) 250 mg/kg/day < 90days Repeated Dose Oral Toxicity (rat)>*8 LOAEL 1000 mg/kg bodyweight/day NOAEL 250 mg/kg bodyweight/day

SECTION 12: Ecological information

12.1. Toxicity

MMB (56539-66-3)	
Acute toxicity to Fish	LC50 > 100 mg/L (96 h, <i>Oryzias latipes</i>) *9 TLm 7400 ppm (48 h, <i>Oryzias latipes</i>) *10
Acute toxicity to Daphnia	EC50 > 1000 mg/L (48h, <i>Daphnia magna</i>) *9
Algal growth inhibition test	ErC50 > 1000 mg/L (72h, <i>Selenastrum capricornutum</i>) *9
Daphnia magna Reproduction Test	NOEC >= 100 mg/L (21 days, <i>Daphnia magna</i>) *9

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12.2. Persistence and degradability

MMB (56539-66-3)	
Persistence and degradability	Product is biodegradable.
Biochemical oxygen demand (BOD)	5.0 mg/L(1000mg/L aqueous solution) *11
Chemical oxygen demand (COD)	8060 mg/l (Result of 1% aqueous solution of MMB) *11

12.3. Bioaccumulative potential

MMB (56539-66-3)	
Log Pow	No data available
Bioaccumulative potential	No data available.

12.4. Mobility in soil

MMB (56539-66-3)	
Ecology - soil	This material dissolves in water and may move in the soil.

12.5. Other adverse effects

Effect on the global warming : No known effects from this product.
GWPmix comment : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Disposal methods

Ecology - waste materials : The low-concentrated waste water of this substance can disintegrate in activated sludge.

SECTION 14: Transport information

Department of Transportation (DOT)

UN/NA-No : NA1993
Proper Shipping Name : Combustible liquid, n.o.s. (Contains: 3-Methoxy-3-methyl-1-butanol)
Hazard Class : Combustible liquid
Packing Group : III
Additional Info. : Non-bulk package (<=400 kg):Not regulated.

Special safety measures related to transportation : Check there are not the damage and/or a leak of the container. Ensure prevention of collapse of cargo. The transport container must be handled carefully, in order to avoid the impact. Do not fall down and/or bump. High humidity strictly prohibited. Note Fire (liquids more than ignition point 70 degrees Celsius). During the loading and unloading of tank trucks, please use the bollard. Make sure the connection of the hose. Remove the residue in the hose completely, before disconnecting the hose.

ADR

UN-No. (ADR) : Not applicable.
Proper Shipping Name (ADR) : Not applicable.
Class (ADR) : Not applicable.
Packing Group (ADR) : Not applicable.

Transport by sea

UN-No. (IMDG) : Not applicable.
Proper Shipping Name (IMDG) : Not applicable.
Class (IMDG) : Not applicable.
Packing Group (IMDG) : Not applicable.

Air transport

UN-No. (IATA) : Not applicable.
Proper Shipping Name (IATA) : Not applicable.
Class (IATA) : Not applicable.
Packing Group (IATA) : Not applicable.

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SECTION 15: Regulatory information

15.1. US Federal regulations

MMB (56539-66-3)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

SARA Section 311/312 Hazard Classes

Health hazard - Serious eye damage or eye irritation
Physical hazard - Flammable (gases, aerosols, liquids, or solids)

15.2. International regulations

CANADA

MMB (56539-66-3)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

MMB (56539-66-3)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

MMB (56539-66-3)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Listed on INSQ (Mexican National Inventory of Chemical Substances)
Listed on CICR (Turkish Inventory and Control of Chemicals)

15.3. US State regulations

California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 2016 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins. For more information go to www.P65Warnings.ca.gov.

U.S. - California - Proposition 65 - Carcinogens List	No
U.S. - California - Proposition 65 - Developmental Toxicity	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Female	No
U.S. - California - Proposition 65 - Reproductive Toxicity - Male	No

SECTION 16: Other information

Revision date : 11/14/2022

Reference : *1 Notox/NL
*2 ECHA Website
*3 Huntingdon Research Centre Ltd./UK 4) Japan Industrial Safety & Health Association.
*4 Japan Industrial Safety & Health Association.
*5 Inveresk Reserch International Ltd./UK
*6 Japan Existing Chemical Data Base 7) ARGUS RESEARCH LABORATORIES,INC
*7 ARGUS RESEARCH LABORATORIES,INC
*8 eurofins
*9 Japan CHEmicals Collaborative Knowledge database.
*10 Chemicals Inspection & Testing Inst., Japan,
*11 NIPPON YURYO KENTEI KYOKAI/JISK-0102-17

Reference database : CosIng, JCDB DATABASE, LOLI

Full text of H-phrases:

H227	Combustible liquid
H320	Causes eye irritation

SDS US (GHS HazCom 2012)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product