

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product form	: Substance
Trade name	: Methyl Isobutyl Carbinol
Chemical name	: 4-methylpentan-2-ol; methyl isobutyl carbinol
IUPAC name	: 4-methylpentan-2-ol
EC Index-No.	: 603-008-00-8
EC-No.	: 203-551-7
CAS-No.	: 108-11-2
REACH registration No	: 01-2119473979-13
Type of product	: Pure substance
Formula	: C <sub>6</sub> H <sub>14</sub> O
Synonyms	: 1,3-dimethyl-1-butanol / 2-methyl-4-pentanol / 2-methylpentan-4-ol / 2-Pentanol, 4-methyl- / 3-MIC / 4-dimethyl-2-butanol / 4-methyl-2-amyl alcohol / 4-methyl-2-pentyl alcohol / 4-Methyl-2-pentylalkohol / 4-methylpentan-2-ol / 4-methylpentanol-2 / isobutylmethylmethanol / MAOH / methyl isobutyl carbinol / methylamyl alcohol / MIBC / MIC
Product group	: Trade product
BIG No	: 10221

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

##### 1.2.1. Relevant identified uses

Use of the substance/mixture	: organic synthesis, brake fluids
Use of the substance/mixture	: Solvent

##### 1.2.2. Uses advised against

No additional information available

#### 1.3. Details of the supplier of the safety data sheet

##### Supplier

Monument Chemical  
16717 Jacintoport Blvd.  
US- 77015 Houston, TX  
USA  
T 832-376-2000  
[sds@monumentchemical.com](mailto:sds@monumentchemical.com) - [www.monumentchemical.com](http://www.monumentchemical.com)

##### Only Representative

Monument Chemical B.V.  
Ketenislaan 3  
BE- B-9130 Kallo  
Belgium  
T +32 3 570 28 11  
[sds@monumentchemical.com](mailto:sds@monumentchemical.com) - [www.monumentchemical.com](http://www.monumentchemical.com)

#### 1.4. Emergency telephone number

Emergency number	: 24 HR CHEMTREC: 1-800-424-9300 (International +1 703-741-5970); 24 HR Emergency Assistance: 1-832-376-2026
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### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flammable liquids, Category 3	H226
Serious eye damage/eye irritation, Category 2	H319
Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation	H335

Full text of H- and EUH-statements: see section 16

Specific concentration limits:  
( 25 ≤ C < 100)

STOT SE 3, H335

##### Adverse physicochemical, human health and environmental effects

Flammable liquid and vapour. May cause respiratory irritation. Causes serious eye irritation.

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according to Regulation (EU) 2015/830

### 2.2. Label elements

#### Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS02

GHS07

Signal word (CLP) :

Warning

Hazard statements (CLP) :

H226 - Flammable liquid and vapour.

H319 - Causes serious eye irritation.

H335 - May cause respiratory irritation.

Precautionary statements (CLP) :

P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.

No smoking.

P233 - Keep container tightly closed.

P240 - Ground and bond container and receiving equipment.

P241 - Use explosion-proof electrical, lighting, ventilating equipment.

P261 - Avoid breathing dust, fume, gas, mist, spray, vapours.

P264 - Wash hands, forearms and face thoroughly after handling.

P271 - Use only outdoors or in a well-ventilated area.

P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.

P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .

P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P312 - Call a POISON CENTRE or doctor if you feel unwell.

P337+P313 - If eye irritation persists: Get medical advice/attention.

P370+P378 - In case of fire: Use alcohol resistant foam, carbon dioxide (CO<sub>2</sub>), dry extinguishing powder, Water spray to extinguish.

P403+P233 - Store in a well-ventilated place. Keep container tightly closed.

P403+P235 - Store in a well-ventilated place. Keep cool.

P405 - Store locked up.

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

Contains no PBT/vPvB substances  $\geq 0.1\%$  assessed in accordance with REACH Annex XIII

## SECTION 3: Composition/information on ingredients

### 3.1. Substances

Substance type	: Mono-constituent
Chemical name	: 4-methylpentan-2-ol; methyl isobutyl carbinol
CAS-No.	: 108-11-2
EC-No.	: 203-551-7
EC Index-No.	: 603-008-00-8

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
4-methylpentan-2-ol; methyl isobutyl carbinol	CAS-No.: 108-11-2 EC-No.: 203-551-7 EC Index-No.: 603-008-00-8 REACH-no: 01-2119473979-13	> 99	Flam. Liq. 3, H226 Eye Irrit. 2, H319 STOT SE 3, H335

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Specific concentration limits:		
Name	Product identifier	Specific concentration limits
4-methylpentan-2-ol; methyl isobutyl carbinol	CAS-No.: 108-11-2 EC-No.: 203-551-7 EC Index-No.: 603-008-00-8 REACH-no: 01-2119473979-13	( 25 ≤C < 100) STOT SE 3, H335

Full text of H- and EUH-statements: see section 16

### 3.2. Mixtures

Not applicable

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures general	: Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital. Call a poison center or a doctor if you feel unwell.
First-aid measures after inhalation	: Remove person to fresh air and keep comfortable for breathing. Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service. Call a poison center or a doctor if you feel unwell.
First-aid measures after skin contact	: Rinse with water. Soap may be used. Take victim to a doctor if irritation persists. Rinse skin with water/shower. Take off immediately all contaminated clothing.
First-aid measures after eye contact	: Rinse immediately with plenty of water. Remove contact lenses, if present and easy to do. Continue rinsing. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists. 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.
First-aid measures after ingestion	: Rinse mouth with water. Immediately after ingestion: give lots of water to drink. Victim is fully conscious: immediately induce vomiting. Induce vomiting by giving a 0.9 % saline solution. Call Poison Information Centre ( <a href="http://www.big.be/antigif.html">www.big.be/antigif.html</a> ). Consult a doctor/medical service if you feel unwell. Ingestion of large quantities: immediately to hospital. Take the container/vomit to the doctor/hospital. Doctor: gastric lavage. Call a poison center or a doctor if you feel unwell.

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation	: Irritation of the respiratory tract. Dry/sore throat. Irritation of the nasal mucous membranes. EXPOSURE TO HIGH CONCENTRATIONS: Dizziness. Narcosis. Headache. Disturbances of consciousness. Respiratory difficulties. May cause respiratory irritation.
Symptoms/effects after skin contact	: Slight irritation. Red skin. Dry skin. Itching.
Symptoms/effects after eye contact	: Irritation of the eye tissue. Eye irritation.
Symptoms/effects after ingestion	: Vomiting. Abdominal pain. AFTER INGESTION OF HIGH QUANTITIES: Dizziness. Headache. Disturbances of consciousness.
Chronic symptoms	: No effects known.

### 4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

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### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

- Suitable extinguishing media : Quick-acting ABC powder extinguisher. Quick-acting BC powder extinguisher. Quick-acting class B foam extinguisher. Quick-acting CO2 extinguisher. Class B foam (not alcohol-resistant). Water spray. Dry powder. Foam. Carbon dioxide.
- Unsuitable extinguishing media : Water (quick-acting extinguisher, reel); risk of puddle expansion. Water; risk of puddle expansion.

#### 5.2. Special hazards arising from the substance or mixture

- Fire hazard : DIRECT FIRE HAZARD: Flammable liquid and vapour. Gas/vapour flammable with air within explosion limits. INDIRECT FIRE HAZARD: May build up electrostatic charges: risk of ignition. May be ignited by sparks. Reactions involving a fire hazard: see "Reactivity Hazard". Flammable liquid and vapour.
- Explosion hazard : DIRECT EXPLOSION HAZARD: Gas/vapour explosive with air within explosion limits. INDIRECT EXPLOSION HAZARD: may be ignited by sparks. Reactions with explosion hazards: see "Reactivity Hazard".
- Hazardous decomposition products in case of fire : Upon combustion: CO and CO2 are formed.

#### 5.3. Advice for firefighters

- Precautionary measures fire : Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: seal off low-lying areas. Exposure to fire/heat: have neighbourhood close doors and windows.
- Firefighting instructions : Cool tanks/drums with water spray/remove them into safety.
- Protection during firefighting : Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

##### 6.1.1. For non-emergency personnel

- Protective equipment : Gloves (EN 374). Protective clothing (EN 14605 or EN 13034). Large spills/in enclosed spaces: self-contained breathing apparatus (EN 136 + EN 137).
- Emergency procedures : Ventilate spillage area. Mark the danger area. Stop engines and no smoking. No naked flames or sparks. Spark- and explosionproof appliances and lighting equipment. Wash contaminated clothes. In case of hazardous reactions: keep upwind. In case of reactivity hazard: consider evacuation. No open flames, no sparks, and no smoking. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes.

##### 6.1.2. For emergency responders

- Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

#### 6.2. Environmental precautions

Avoid release to the environment. Prevent spreading in sewers.

#### 6.3. Methods and material for containment and cleaning up

- For containment : Contain released product, collect/pump into suitable containers. Plug the leak, cut off the supply. Dam up the liquid spill. Provide equipment/receptacles with earthing. Do not use compressed air for pumping over spills. Heating: dilute combustible gas/vapour with water curtain.

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- Methods for cleaning up : Take up liquid spill into absorbent material. Take up liquid spill into absorbent material, e.g.: dry sand/earth/vermiculite kieselguhr, powdered limestone. Scoop absorbed substance into closing containers. Carefully collect the spill/leftovers. Damaged/cooled tanks must be emptied. Do not use compressed air for pumping over spills. Clean contaminated surfaces with an excess of water. Take collected spill to manufacturer/competent authority. Wash clothing and equipment after handling. Notify authorities if product enters sewers or public waters.
- Other information : Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- Precautions for safe handling : Use spark-/explosionproof appliances and lighting system. Take precautions against electrostatic charges. Keep away from naked flames/heat. Keep away from ignition sources/sparks. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Comply with the legal requirements. Remove contaminated clothing immediately. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Do not discharge the waste into the drain. Do not use compressed air for pumping over. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Ground/bond container and receiving equipment. Use only non-sparking tools. Take precautionary measures against static discharge. Flammable vapours may accumulate in the container. Use explosion-proof equipment. Wear personal protective equipment. Use only outdoors or in a well-ventilated area. Avoid breathing dust/fume/gas/mist/vapours/spray. Avoid contact with skin and eyes.
- Hygiene measures : Observe normal hygiene standards. Keep container tightly closed. Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

### 7.2. Conditions for safe storage, including any incompatibilities

- Technical measures : Ground/bond container and receiving equipment.
- Storage conditions : Store in a well-ventilated place. Keep cool. Keep container tightly closed. Store locked up.
- Heat and ignition sources : KEEP SUBSTANCE AWAY FROM: heat sources. ignition sources.
- Information on mixed storage : KEEP SUBSTANCE AWAY FROM: oxidizing agents. (strong) acids. (strong) bases. amines.
- Storage area : Ventilation at floor level. Fireproof storeroom. Provide for a tub to collect spills. Provide the tank with earthing. Store at ambient temperature. Meet the legal requirements.
- Special rules on packaging : SPECIAL REQUIREMENTS: closing. clean. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
- Packaging materials : SUITABLE MATERIAL: steel. stainless steel. carbon steel. aluminium. iron. zinc. polyethylene. glass. tin.

### 7.3. Specific end use(s)

No additional information available

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

#### 8.1.1 National occupational exposure and biological limit values

4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)	
Belgium - Occupational Exposure Limits	
OEL TWA	106 mg/m <sup>3</sup>
OEL TWA [ppm]	25 ppm
OEL STEL	169 mg/m <sup>3</sup>

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<b>4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)</b>	
OEL STEL [ppm]	40 ppm
<b>France - Occupational Exposure Limits</b>	
VME (OEL TWA)	100 mg/m <sup>3</sup>
VME (OEL TWA) [ppm]	25 ppm
<b>Germany - Occupational Exposure Limits (TRGS 900)</b>	
Local name	4-Methyl-pentan-2-ol
AGW (OEL TWA) [1]	85 mg/m <sup>3</sup>
AGW (OEL TWA) [2]	20 ppm
Peak exposure limitation factor	1(l)
Remark	DFG
Regulatory reference	TRGS900
<b>Spain - Occupational Exposure Limits</b>	
Local name	4-Metil-2-pentanol (Alcohol metilamílico)
VLA-ED (OEL TWA) [1]	106 mg/m <sup>3</sup>
VLA-ED (OEL TWA) [2]	25 ppm
VLA-EC (OEL STEL)	170 mg/m <sup>3</sup>
VLA-EC (OEL STEL) [ppm]	40 ppm
Remark	Vía dérmica (Indica que, en las exposiciones a esta sustancia, la aportación por la vía cutánea puede resultar significativa para el contenido corporal total si no se adoptan medidas para prevenir la absorción. En estas situaciones, es aconsejable la utilización del control biológico para poder cuantificar la cantidad global absorbida del contaminante. Para más información véase el Apartado 5 de este documento).
Regulatory reference	Límites de Exposición Profesional para Agentes Químicos en España 2022. INSHT
<b>United Kingdom - Occupational Exposure Limits</b>	
WEL TWA (OEL TWA) [1]	106 mg/m <sup>3</sup>
WEL TWA (OEL TWA) [2]	25 ppm
WEL STEL (OEL STEL)	170 mg/m <sup>3</sup>
WEL STEL (OEL STEL) [ppm]	40 ppm
<b>USA - ACGIH - Occupational Exposure Limits</b>	
Local name	Methyl isobutyl carbinol
ACGIH OEL TWA [ppm]	20 ppm
ACGIH OEL STEL [ppm]	40 ppm
Remark (ACGIH)	URT & eye irr; CNS impair
Regulatory reference	ACGIH 2022

### 8.1.2. Recommended monitoring procedures

No additional information available

### 8.1.3. Air contaminants formed

No additional information available

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### 8.1.4. DNEL and PNEC

4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)	
<b>DNEL/DMEL (Workers)</b>	
Acute - systemic effects, inhalation	208 mg/m <sup>3</sup>
Acute - local effects, inhalation	104 mg/m <sup>3</sup>
Long-term - systemic effects, dermal	11.8 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	83 mg/m <sup>3</sup>
Long-term - local effects, inhalation	83 mg/m <sup>3</sup>
<b>DNEL/DMEL (General population)</b>	
Acute - systemic effects, inhalation	155.2 mg/m <sup>3</sup>
Acute - local effects, inhalation	52.1 mg/m <sup>3</sup>
Long-term - systemic effects, oral	4.2 mg/kg bodyweight/day
Long-term - systemic effects, inhalation	14.7 mg/m <sup>3</sup>
Long-term - systemic effects, dermal	4.2 mg/kg bodyweight/day
Long-term - local effects, inhalation	14.7 mg/m <sup>3</sup>
<b>PNEC (Water)</b>	
PNEC aqua (freshwater)	0.6 mg/l
PNEC aqua (marine water)	0.06 mg/l
PNEC aqua (intermittent, freshwater)	3.3 mg/l
<b>PNEC (Sediment)</b>	
PNEC sediment (freshwater)	2.94 mg/kg dwt
PNEC sediment (marine water)	0.3 mg/kg dwt
<b>PNEC (Soil)</b>	
PNEC soil	0.24 mg/kg dwt
<b>PNEC (STP)</b>	
PNEC sewage treatment plant	1 mg/l

### 8.1.5. Control banding

No additional information available

## 8.2. Exposure controls

### 8.2.1. Appropriate engineering controls

#### Appropriate engineering controls:

Ensure good ventilation of the work station.

### 8.2.2. Personal protection equipment

#### Personal protective equipment symbol(s):



#### 8.2.2.1. Eye and face protection

##### Eye protection:

Safety glasses. Safety glasses

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### 8.2.2.2. Skin protection

#### Skin and body protection:

Protective clothing

#### Hand protection:

Gloves

#### Other skin protection

#### Materials for protective clothing:

Good resistance: Butyl rubber. Polyvinylchloride (PVC). neoprene (chloroprene rubber). Nitrile rubber

### 8.2.2.3. Respiratory protection

#### Respiratory protection:

Full face mask with filter type A at conc. in air > exposure limit

### 8.2.2.4. Thermal hazards

No additional information available

### 8.2.3. Environmental exposure controls

#### Environmental exposure controls:

Avoid release to the environment.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Liquid.
Molecular mass	: 102.18 g/mol
Colour	: Colourless.
Odour	: Mild odour. Alcohol odour.
Odour threshold	: No data available
pH	: No data available
Relative evaporation rate (butylacetate=1)	: 0.3
Relative evaporation rate (ether=1)	: 33
Melting point	: -90 °C
Freezing point	: No data available
Boiling point	: 132 °C Atm. press.: 1013 hPa Decomposition: 'no'
Flash point	: 41 °C
Critical temperature	: 291 °C
Auto-ignition temperature	: 335 °C (EU Method A.15: Auto-ignition Temperature (liquids and gases), T2)
Decomposition temperature	: No data available
Flammability (solid, gas)	: Not applicable
Vapour pressure	: 7 hPa (20 °C, Antoine equation)
Vapour pressure at 50°C	: 36 hPa (Antoine equation)
Relative vapour density at 20°C	: 3.5
Relative density	: 0.81 Type: 'relative density' Temp.: 20 °C
Relative density of saturated gas/air mixture	: 1
Density	: 0.81 g/cm <sup>3</sup> Type: 'density' Temp.: 20 °C
Solubility	: Moderately soluble in water. Soluble in ethanol. Soluble in ether. Water: 2.18 g/100ml (20 °C, OECD 105: Water Solubility)
Partition coefficient n-octanol/water (Log Pow)	: 1.43 (at 25 °C)
Partition coefficient n-octanol/water (Log Kow)	: 1.57 QSAR
Viscosity, kinematic	: 5.03 mm <sup>2</sup> /s
Viscosity, dynamic	: 4.074 mPa.s (25 °C)
Explosive properties	: No data available
Oxidising properties	: No data available
Explosive limits	: 1 – 6 vol % 42 – 235 g/m <sup>3</sup>
Lower explosive limit (LEL)	: 1 vol %
Upper explosive limit (UEL)	: 6 vol %



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Particle size : Not applicable (liquid)

### 9.2. Other information

Specific conductivity : 70000 pS/m  
Saturation concentration : 25 g/m<sup>3</sup>  
VOC content : 100 %  
Other properties : Gas/vapour heavier than air at 20°C. Clear. Slightly volatile. Neutral reaction. May generate electrostatic charges.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Reacts with (some) acids: (increased) risk of fire/explosion. Reacts violently with (strong) oxidizers: (increased) risk of fire/explosion. Flammable liquid and vapour.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

### 10.4. Conditions to avoid

Avoid contact with hot surfaces. Heat. No flames, no sparks. Eliminate all sources of ignition.

### 10.5. Incompatible materials

No additional information available

### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects

Acute toxicity (oral) : Not classified  
Acute toxicity (dermal) : Not classified  
Acute toxicity (inhalation) : Not classified

4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)	
LD50 oral rat	2590 mg/kg bodyweight Animal: rat, Guideline: OECD Guideline 401 (Acute Oral Toxicity), 95% CL: 2260 - 2970
LD50 dermal rabbit	2870 mg/kg bodyweight (Equivalent or similar to OECD 402, 4 day(s), Rabbit, Experimental value, Dermal, 14 day(s))
LC50 Inhalation - Rat	> 16 mg/l air Animal: rat, Guideline: OECD Guideline 403 (Acute Inhalation Toxicity)

Skin corrosion/irritation : Not classified  
Serious eye damage/irritation : Causes serious eye irritation.  
Respiratory or skin sensitisation : Not classified  
Germ cell mutagenicity : Not classified  
Carcinogenicity : Not classified  
Reproductive toxicity : Not classified  
STOT-single exposure : May cause respiratory irritation.  
STOT-repeated exposure : Not classified

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4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)	
NOAEC (inhalation, rat, vapour, 90 days)	3698 mg/l air Animal: rat, Guideline: OECD Guideline 412 (Subacute Inhalation Toxicity: 28-Day Study)

Aspiration hazard : Not classified

4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)	
Viscosity, kinematic	5.03 mm <sup>2</sup> /s

Potential adverse human health effects and symptoms : Practically non-toxic if swallowed (LD50 oral, rat > 2000 mg/kg), Slightly irritant to skin, Practically non-toxic in contact with skin (LD50 skin > 2000 mg/kg), May cause respiratory irritation, Slightly harmful by inhalation, Caution! Substance is absorbed through the skin

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008.

Ecology - air : Not included in the list of substances which may contribute to the greenhouse effect (IPCC). Not included in the list of fluorinated greenhouse gases (Regulation (EU) No 517/2014). Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

Ecology - water : Slightly harmful to crustacea. Slightly harmful to fishes. Fouling to shoreline. Slightly harmful to bacteria.

Hazardous to the aquatic environment, short-term (acute) : Not classified

Hazardous to the aquatic environment, long-term (chronic) : Not classified

4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)	
LC50 - Fish [1]	> 92.4 mg/l Test organisms (species): Pimephales promelas
EC50 - Crustacea [1]	337 mg/l Test organisms (species): Daphnia magna
EC50 72h - Algae [1]	147 mg/l (OECD 201: Alga, Growth Inhibition Test, Pseudokirchneriella subcapitata, Static system, Fresh water, Experimental value, Cell numbers)

### 12.2. Persistence and degradability

4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)	
Persistence and degradability	Biodegradable in the soil. Readily biodegradable in water.
Biochemical oxygen demand (BOD)	2.12 g O <sub>2</sub> /g substance
Chemical oxygen demand (COD)	2.6 g O <sub>2</sub> /g substance
ThOD	2.8 g O <sub>2</sub> /g substance
BOD (% of ThOD)	0.76 (Calculated value)

### 12.3. Bioaccumulative potential

4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)	
Partition coefficient n-octanol/water (Log Pow)	1.43 (at 25 °C)
Partition coefficient n-octanol/water (Log Kow)	1.57 QSAR
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

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### 12.4. Mobility in soil

#### 4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)

Organic Carbon Normalized Adsorption Coefficient (Log Koc)	1.11
Ecology - soil	No (test)data on mobility of the substance available.

### 12.5. Results of PBT and vPvB assessment

#### 4-methylpentan-2-ol; methyl isobutyl carbinol (108-11-2)

Results of PBT assessment	The product does not meet the PBT and vPvB classification criteria
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### 12.6. Other adverse effects

No additional information available

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste treatment methods	: Dispose of contents/container in accordance with licensed collector's sorting instructions.
Product/Packaging disposal recommendations	: Do not discharge into surface water. Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle by distillation. Remove to an authorized waste incinerator for solvents with energy recovery. Obtain the consent of pollution control authorities before discharging to wastewater treatment plants.
Additional information	: Hazardous waste according to Directive 2008/98/EC, as amended by Regulation (EU) No 1357/2014 and Regulation (EU) No 2017/997. Flammable vapours may accumulate in the container.
European List of Waste (LoW) code	: 15 01 10* - packaging containing residues of or contaminated by dangerous substances 14 06 03* - other solvents and solvent mixtures

## SECTION 14: Transport information

In accordance with ADR / IMDG / IATA / ADN / RID

### 14.1 UN number

UN-No. (ADR)	: UN 2053
UN-No. (IMDG)	: UN 2053
UN-No. (IATA)	: UN 2053
UN-No. (ADN)	: UN 2053
UN-No. (RID)	: UN 2053

### 14.2. UN proper shipping name

Proper Shipping Name (ADR)	: METHYL ISOBUTYL CARBINOL
Proper Shipping Name (IMDG)	: METHYL ISOBUTYL CARBINOL
Proper Shipping Name (IATA)	: Methyl isobutyl carbinol
Proper Shipping Name (ADN)	: METHYL ISOBUTYL CARBINOL
Proper Shipping Name (RID)	: METHYL ISOBUTYL CARBINOL
Transport document description (ADR)	: UN 2053 METHYL ISOBUTYL CARBINOL, 3, III, (D/E)
Transport document description (IMDG)	: UN 2053 METHYL ISOBUTYL CARBINOL, 3, III (41°C c.c.)
Transport document description (IATA)	: UN 2053 Methyl isobutyl carbinol, 3, III
Transport document description (ADN)	: UN 2053 METHYL ISOBUTYL CARBINOL, 3, III
Transport document description (RID)	: UN 2053 METHYL ISOBUTYL CARBINOL, 3, III

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### 14.3. Transport hazard class(es)

#### ADR

Transport hazard class(es) (ADR) : 3  
Danger labels (ADR) : 3



#### IMDG

Transport hazard class(es) (IMDG) : 3  
Danger labels (IMDG) : 3



#### IATA

Transport hazard class(es) (IATA) : 3  
Danger labels (IATA) : 3



#### ADN

Transport hazard class(es) (ADN) : 3  
Danger labels (ADN) : 3



#### RID

Transport hazard class(es) (RID) : 3  
Danger labels (RID) : 3



### 14.4. Packing group

Packing group (ADR) : III  
Packing group (IMDG) : III  
Packing group (IATA) : III  
Packing group (ADN) : III  
Packing group (RID) : III

### 14.5. Environmental hazards

Dangerous for the environment : No  
Marine pollutant : No  
Other information : No supplementary information available

### 14.6. Special precautions for user

#### Overland transport

Transport regulations (ADR) : Subject to the provisions

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Classification code (ADR)	: F1
Limited quantities (ADR)	: 5I
Excepted quantities (ADR)	: E1
Packing instructions (ADR)	: P001, IBC03, LP01, R001
Mixed packing provisions (ADR)	: MP19
Portable tank and bulk container instructions (ADR)	: T2
Portable tank and bulk container special provisions (ADR)	: TP1
Tank code (ADR)	: LGBF
Vehicle for tank carriage	: FL
Transport category (ADR)	: 3
Special provisions for carriage - Packages (ADR)	: V12
Special provisions for carriage - Operation (ADR)	: S2
Hazard identification number (Kemler No.)	: 30
Orange plates	:



Tunnel restriction code (ADR)	: D/E
EAC code	: •3Y

### Transport by sea

Transport regulations (IMDG)	: Subject to the provisions
Limited quantities (IMDG)	: 5 L
Excepted quantities (IMDG)	: E1
Packing instructions (IMDG)	: P001, LP01
IBC packing instructions (IMDG)	: IBC03
Tank instructions (IMDG)	: T2
Tank special provisions (IMDG)	: TP1
EmS-No. (Fire)	: F-E
EmS-No. (Spillage)	: S-D
Stowage category (IMDG)	: A
Flash point (IMDG)	: 41°C c.c.
Properties and observations (IMDG)	: Colourless liquid. Flashpoint: 41°C c.c. Explosive limits: 1% to 5.5% Miscible with water. Harmful by inhalation.

### Air transport

Transport regulations (IATA)	: Subject to the provisions
PCA Excepted quantities (IATA)	: E1
PCA Limited quantities (IATA)	: Y344
PCA limited quantity max net quantity (IATA)	: 10L
PCA packing instructions (IATA)	: 355
PCA max net quantity (IATA)	: 60L
CAO packing instructions (IATA)	: 366
CAO max net quantity (IATA)	: 220L
ERG code (IATA)	: 3L

### Inland waterway transport

Classification code (ADN)	: F1
Limited quantities (ADN)	: 5 L
Excepted quantities (ADN)	: E1
Carriage permitted (ADN)	: T
Equipment required (ADN)	: PP, EX, A
Ventilation (ADN)	: VE01
Number of blue cones/lights (ADN)	: 0

### Rail transport

Transport regulations (RID)	: Subject to the provisions
Classification code (RID)	: F1
Limited quantities (RID)	: 5L
Excepted quantities (RID)	: E1
Packing instructions (RID)	: P001, IBC03, LP01, R001

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Mixed packing provisions (RID)	: MP19
Portable tank and bulk container instructions (RID)	: T2
Portable tank and bulk container special provisions (RID)	: TP1
Tank codes for RID tanks (RID)	: LGBF
Transport category (RID)	: 3
Special provisions for carriage – Packages (RID)	: W12
Colis express (express parcels) (RID)	: CE4
Hazard identification number (RID)	: 30

### 14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

## SECTION 15: Regulatory information

### 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

#### 15.1.1. EU-Regulations

##### REACH Annex XVII (Restriction List)

###### EU restriction list (REACH Annex XVII)

Reference code	Applicable on
3(a)	4-methylpentan-2-ol; methyl isobutyl carbinol
3(b)	4-methylpentan-2-ol; methyl isobutyl carbinol
40.	4-methylpentan-2-ol; methyl isobutyl carbinol

##### REACH Annex XIV (Authorisation List)

Not listed on REACH Annex XIV (Authorisation List)

##### REACH Candidate List (SVHC)

Not listed on the REACH Candidate List

##### PIC Regulation (Prior Informed Consent)

Not listed on the PIC list (Regulation EU 649/2012)

##### POP Regulation (Persistent Organic Pollutants)

Not listed on the POP list (Regulation EU 2019/1021)

##### Ozone Regulation (1005/2009)

Not listed on the Ozone Depletion list (Regulation EU 1005/2009)

##### VOC Directive (2004/42)

VOC content : 100 %

##### Explosives Precursors Regulation (2019/1148)

Contains no substance(s) listed on the Explosives Precursors list (Regulation EU 2019/1148 on the marketing and use of explosives precursors)

##### Drug Precursors Regulation (273/2004)

Contains no substance(s) listed on the Drug Precursors list (Regulation EC 273/2004 on the manufacture and the placing on market of certain substances used in the illicit manufacture of narcotic drugs and psychotropic substances)

#### 15.1.2. National regulations

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

##### Germany

Water hazard class (WGK)	: WGK 1, Slightly hazardous to water (Classification according to VwVwS, Annex 3).
Hazardous Incident Ordinance (12. BImSchV)	: Is not subject of the Hazardous Incident Ordinance (12. BImSchV)
Technical Instructions on Air Quality Control (TA Luft)	: 5.2.5 Organic Substances.

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### Netherlands

Waterbezwaarlijkheid	: 11 - Weinig schadelijk voor in het water levende organismen
SZW-lijst van kankerverwekkende stoffen	: The substance is not listed
SZW-lijst van mutagene stoffen	: The substance is not listed
SZW-lijst van reprotoxische stoffen – Borstvoeding	: The substance is not listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid	: The substance is not listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling	: The substance is not listed

### Denmark

Class for fire hazard	: Class II-1
Store unit	: 5 liter
Classification remarks	: R10 <H226;H319;H335>; Emergency management guidelines for the storage of flammable liquids must be followed
Danish National Regulations	: Young people below the age of 18 years are not allowed to use the product

### Switzerland

Storage class (LK)	: LK 3 - Flammable liquids
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## 15.2. Chemical safety assessment

A chemical safety assessment has been carried out

## SECTION 16: Other information

Abbreviations and acronyms:	
ADN	European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BLV	Biological limit value
BOD	Biochemical oxygen demand (BOD)
COD	Chemical oxygen demand (COD)
DMEL	Derived Minimal Effect level
DNEL	Derived-No Effect Level
EC-No.	European Community number
EC50	Median effective concentration
EN	European Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IMDG	International Maritime Dangerous Goods
LC50	Median lethal concentration
LD50	Median lethal dose
LOAEL	Lowest Observed Adverse Effect Level
NOAEC	No-Observed Adverse Effect Concentration
NOAEL	No-Observed Adverse Effect Level
NOEC	No-Observed Effect Concentration
OECD	Organisation for Economic Co-operation and Development

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Abbreviations and acronyms:	
OEL	Occupational Exposure Limit
PBT	Persistent Bioaccumulative Toxic
PNEC	Predicted No-Effect Concentration
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
SDS	Safety Data Sheet
STP	Sewage treatment plant
ThOD	Theoretical oxygen demand (ThOD)
TLM	Median Tolerance Limit
VOC	Volatile Organic Compounds
CAS-No.	Chemical Abstract Service number
N.O.S.	Not Otherwise Specified
vPvB	Very Persistent and Very Bioaccumulative
ED	Endocrine disrupting properties

Full text of H- and EUH-statements:	
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 3	Flammable liquids, Category 3
H226	Flammable liquid and vapour.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
STOT SE 3	Specific target organ toxicity – Single exposure, Category 3, Respiratory tract irritation

Safety Data Sheet (SDS), EU

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