

SAFETY DATA SHEET
according to Regulation (EC) No. 1907/2006**Product:** **METHYL ISOBUTYL CARBINOL**

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SDS No.: 000169-001 (Version 2.1)

Date 19.10.2011 (*Cancel and replace* : 17.11.2010)**1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING****Substance name:**REACH Registration Name: 4-Methylpentan-2-ol
REACH Registration Number: 01-2119473979-13-0000
EC Nr: 203-551-7
CAS-No.: 108-11-2**Use of the Substance/Mixture :**

Distribution of the substance (Industrial uses: Uses of substances as such or in preparations at industrial sites, Manufacture of bulk, large scale substances (including petroleum products); manufacture of fine chemicals)

Use in coating (industrial) (Formulation [mixing] of preparations and/ or re-packaging (excluding alloys))

Formulation of the substance (Formulation [mixing] of preparations and/ or re-packaging (excluding alloys))

Use in functional fluids (industrial) (Industrial Manufacturing (all))

Use in functional fluids (professional) (Professional uses: Public domain (administration, education, entertainment, services, craftsmen))

Industrial use as an additive in lubricants and greases (Industrial Manufacturing (all))

Professional use as an additive in lubricants and greases (Professional uses: Public domain (administration, education, entertainment, services, craftsmen))

Use in mining industry (Industrial uses: Uses of substances as such or in preparations at industrial sites)

Polymers processing (industrial) (Industrial Manufacturing (all))

Polymers processing (professional) (Professional uses: Public domain (administration, education, entertainment, services, craftsmen))

Use in Oil and Gas field drilling and production operations (Industrial Manufacturing (all))

Industrial use as laboratory reagent

Professional use as laboratory reagent

Company/Undertaking Identification:

Supplier

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Emergency telephone number **1-800-255-3924 - CHEMTEL****2. HAZARDS IDENTIFICATION****Classification (Regulation (EC) No 1272/2008):**

Flammable liquids, 3, H226

Eye irritation, 2, H319

Inhalation: Specific target organ toxicity - single exposure, 3, H335

Classification (Directive 67/548/EEC):

R10

Xi; R36/37/38

Additional information:

For the full text of the R, H, EUH-phrases mentioned in this Section, see Section 16.

Label elements (REGULATION (EC) No 1272/2008):**Hazardous components which must be listed on the label:**

No. in ANNEXE : 603-008-00-8

4-Methylpentan-2-ol

Hazard pictograms:



Signal word:

Warning

Hazard statements:

- H226 : Flammable liquid and vapour.
- H319 : Causes serious eye irritation.
- H335 : May cause respiratory irritation.

Precautionary statements:

Prevention:

- P210 : Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
- P261 : Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
- P280 : Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

- 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 CENTER or doctor/ physician if you feel unwell.

Storage:

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

Special labelling:

EUH066 Repeated exposure may cause skin dryness or cracking.

Other hazards:

Potential health effects:

- Irritating to respiratory system. Eye irritation
- Inhalation: Vapours may cause drowsiness and dizziness.
- Skin contact: Repeated exposure may cause skin dryness or cracking.

Environmental Effects:

- Readily biodegradable. Slightly bioaccumulable.

Physical and chemical hazards:

- Flammable liquid. Vapours are heavier than air.
- Decomposition products: See chapter 10

Other:

- Results of PBT and vPvB assessment: This substance is not considered to be persistent, bioaccumulating, toxic (PBT), nor very persistent, very bioaccumulating (vPvB).

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name of the substance¹: METHYLISOBUTYLCARBINOL

Chemical Name ¹	EC-No.	CAS-No.	Concentration	Classification Directive 67/548/EEC	Classification Regulation (EC) No 1272/2008
4-Methylpentan-2-ol	203-551-7	108-11-2	>= 98,5 %	R10 Xi; R36/37/38	Flam. Liq. 3; H226 Eye Irrit. 2; H319 STOT SE 3 (Inhalation); H335

¹: See chapter 14 for Proper Shipping Name

4. FIRST AID MEASURES

Description of necessary first-aid measures. Most important symptoms/effects, acute and delayed:

General advice:

Under the shower: Take off immediately all contaminated clothing (including shoes).

Inhalation:

Inhalation of mists Move patient from contaminated area to fresh air. Oxygen or artificial respiration if needed. Keep under medical surveillance. In case of problems : Hospitalise.

Skin contact:

Wash immediately, abundantly and thoroughly with water. Consult a physician. In case of extensive burns, hospitalize.

Eye contact:

Wash open eyes immediately, abundantly and thoroughly for at least 15 minutes. Consult an ophthalmologist immediately.

Ingestion:

Do not induce vomiting, rinse mouth and lips with plenty of water if the subject is conscious, then hospitalize.

Protection of first-aiders:

If entering a saturated atmosphere, wear a self contained breathing apparatus. Protective suit.

5. FIREFIGHTING MEASURES

Extinguishing media:

Suitable extinguishing media: Water spray, Dry powder, Carbon dioxide (CO₂), Special foam for polar solvents

Unsuitable extinguishing media: High volume water jet

Special hazards arising from the substance or mixture:

Flammable liquid.

Vapours are heavier than air and may spread along floors.

Possible re-ignition of vapours from a distance

Warm impregnated insulating material can, with time, ignite spontaneously

Thermal decomposition giving flammable and toxic products :, Carbon oxides (by combustion), Organic vapours

Advice for firefighters:

Specific methods:

Use water spray to cool unopened containers. Ensure containers can be rapidly moved. In case of fire nearby, remove exposed containers.

Special protective actions for fire-fighters:

In the event of fire, wear self-contained breathing apparatus. Complete suit protecting against chemicals

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:

Ensure adequate ventilation. Evacuate personnel to safe areas. Prohibit all sources of sparks and ignition - Do not smoke. Use personal protective equipment. Avoid contact with skin and eyes and inhalation of vapours.

Environmental precautions:

Dam up with sand or inert earth (do not use combustible materials). Should not be released into the environment. Do not let product enter drains.

Methods and materials for containment and cleaning up:

Recovery:

Pump into a labelled inert emergency tank. Moist product : absorb the remainder with an inert absorbent material. Recover the product.

Elimination:

Destroy the product by incineration (in accordance with local and national regulations).

7. HANDLING AND STORAGE

Precautions for safe handling:

Technical measures/Precautions:

Storage and handling precautions applicable to products: Liquid. Flammable. Irritant. With vapours explosive in air. Provide appropriate exhaust ventilation at machinery. Provide showers, eye-baths. Provide water supplies near the point of use. Provide fire-blanket nearby. Provide waterproof electrical equipment. Provide electrical earthing of equipment.

Safe handling advice:

Prohibit all sources of sparks and ignition - Do not smoke. Do not use air for transfers. Keep well away from naked flames. Avoid accumulation of static charges during transfers in metallic systems.

Hygiene measures:

Avoid inhalation of vapours. Do not get in eyes, on skin, or on clothing. When using do not eat, drink or smoke. Wash hands after handling. Remove contaminated clothing and protective equipment before entering eating areas.

Conditions for safe storage, including any incompatibilities:

Store protected from moisture and heat. Remove all sources of ignition. Keep tightly closed in a dry, cool and well-ventilated place. Provide a catch-tank in a bunded area. Provide waterproof electrical equipment. Provide electrical earthing of equipment and electrical equipment usable in explosive atmospheres.

Incompatible products:

Strong oxidizing agents

Packaging material:

Recommended: Stainless steel, Iron, Protected glass (for small quantities)

Specific use(s) (End Use): None.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

CONTROL PARAMETERS:

Exposure Limit Values

4-Methylpentan-2-ol

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
ACGIH (US)	2007	TWA	25	-	-
ACGIH (US)	2007	STEL	40	-	-
ACGIH (US)	2007	SKIN	-	-	Can be absorbed through the skin.

Derived No Effect Level (DNEL):

End Use	Inhalation	Ingestion	Skin contact
Workers	208 mg/m3 (ST, SE) 104 mg/m3 (ST, LE) 83 mg/m3 (LT, SE, LE)		11,8 mg/kg bw/day (LT, SE)
Consumers	155,2 mg/m3 (ST, SE) 52,1 mg/m3 (ST, LE) 14,7 mg/m3 (LT, SE, LE)	4,2 mg/kg bw/day (LT, SE)	4,2 mg/kg bw/day (LT, SE)

LE : Local effects, **SE** : Systemic effects, **LT** : Long term, **ST** : Short term

Predicted No Effect Concentration (PNEC):

Compartment:	Value:
Fresh water	0,6 mg/l
Marine water	0,06 mg/l
Water (Intermittent release)	3,3 mg/l
Effects on waste water treatment plants	1 mg/l
Fresh water sediment	2,94 mg/kg dw
Marine sediment	0,3 mg/kg dw
Soil	0,24 mg/kg dw

EXPOSURE CONTROLS:

General protective measures:

Provide sufficient air exchange and/or exhaust in work rooms.

Personal protective equipment:

Respiratory protection:

Low concentrations or short activity: Mask with specific cartridge Recommended Filter type: A2B2E2K2P3

High concentrations or prolonged activity: Self contained Breathing Apparatus

Hand protection:

Intermittent contact: Gloves (PVC, neoprene, nitrile rubber)
According to permeation index EN 374: 1 (time elapsed > 10 mins)

Prolonged contact: Impervious butyl rubber gloves

Eye/face protection:

Safety glasses with side-shields

Skin and body protection:

At the workplace : Protective clothing (cotton)

Intervention at incident: Waterproof suit

Environmental exposure controls:

See chapter 6

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:

Physical state (20°C):	liquid
Colour:	colourless
Odour:	mild, alcohol-like
Olfactory threshold:	No data available.
pH:	No data available.
Melting point/range :	-90 °C
Boiling point/boiling range :	132 °C
Flash point:	41 °C
Evaporation rate:	No data available.

Flammability (solid, gas):

Lower flammable limit :	1 %(V)
Upper flammable limit :	5,5 %(V)
Vapour pressure:	3,7 hPa , at 20 °C 10 hPa , at 30 °C 100 hPa , at 71,9 °C

Vapour density:

No data available.

Relative density (Water=1):

0,807

Bulk density:

807,5 kg/m³ , at 20 °C

Water solubility:

21,8 g/l Highly soluble at 20 °C (OECD Test Guideline 105)

Partition coefficient: n-octanol/water:

log Kow : 1,57 , at 20 °C

Autoignition temperature:

335 °C (Standard DIN 51 794)

Decomposition temperature:

No data available.

Viscosity, dynamic:

4,074 - 4,116 mPa.s , at 25 °C

Explosive properties:

Explosivity: Not relevant (due to the chemical structure)

Oxidizing properties:

Not relevant (due to the chemical structure)

Other data:

Solubility in other solvents:

Soluble in most organic solvents

Molecular Weight:

102,18 g/mol

Refractive index:

1,411

10. STABILITY AND REACTIVITY

Reactivity & Chemical stability:

The product is stable under normal handling and storage conditions.

Conditions to avoid:

Keep away from heat and sources of ignition.

Incompatible materials to avoid:

Strong oxidizing agents, Strong acids

Hazardous decomposition products:

Thermal decomposition giving flammable and toxic products :
Carbon oxides (by combustion), Organic vapours

11. TOXICOLOGICAL INFORMATION

Toxicokinetics (absorption, metabolism, distribution and elimination):

A big quantity of product can be quickly absorbed through all routes. It is distributed in the whole body.

Toxicological information:

Acute toxicity:

Inhalation: Slightly harmful by inhalation

- In man : At high vapour/mist concentrations
May cause headache and dizziness., Drowsiness, Loss of consciousness
 - In animals : vapour LC50/4 h/rat: > 16 mg/l (Method: OECD Test Guideline 403)
- Ingestion:** **Slightly harmful by ingestion**
Ingestion may cause irritation to mucous membranes.
- In animals : LD50/rat: 2.590 mg/kg
- Dermal:** **Slightly harmful in contact with skin**
Skin penetration possible
- In animals : LD50/rabbit: 2.870 mg/kg

Local effects (Corrosion / Irritation / Serious eye damage):

- Skin contact:** **Irritating to skin.**
- In man : Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
 - In animals : Skin irritation (OECD Test Guideline 404, rabbit, Exposure time: 4 h)
- Eye contact:** **Irritating to eyes.**
- In man : Eye irritation (Exposure to vapours)
(0,2 mg/l)
 - In animals : Eye irritation (OECD Test Guideline 405, rabbit)

Respiratory or skin sensitization:

- Inhalation:** No data available.
- Skin contact:** **Not a skin sensitizer**
- In animals : No skin allergy was observed (Method : OECD Test Guideline 406 Guinea pig maximization test)

CMR effects :

Mutagenicity: **According to available experimental data: Not genotoxic**

In vitro

Ames test in vitro: Inactive
Tests for chromosome aberrations in vitro on mammalian cells: Inactive
In vitro gene mutations test on mammalian cells: Inactive

Carcinogenicity:

Based on the available data, the substance is not suspected of having carcinogenic potential
May be considered as comparable to a similar product for which experimental results are:

4-METHYLPENTAN-2-ONE :

- In animals :

The tumour-inducing effects on the liver and lungs observed at high doses in rats and mice are specific to these animal species and are considered as unsuitable for extrapolation to man
At high doses : Liver tumours (mouse) - Kidney tumours (rat) (rat, mouse, 2 years, By inhalation)
No Observed Adverse Effect Level (NOAEL) (1,84 mg/l)

Reproductive toxicity:

Fertility:

Based on the available data, the substance is not suspected of having reprotoxic potential.
May be considered as comparable to a similar product for which experimental results are:

4-METHYLPENTAN-2-ONE :

- In animals :

Multiple generation reproduction test (Method: OECD Test Guideline 416, rat, By inhalation)

Absence of toxic effects on fertility
At high dose :, Effects on offspring
NOAEL (Parent): 4,1 mg/l
NOAEL (F1): 4,1 mg/l

Foetal development:

Based on the available data, the substance is not suspected of having developmental toxicity potential.
May be considered as comparable to a similar product for which experimental results are:

4-METHYLPENTAN-2-ONE :

- In animals :

Exposure during pregnancy (Method: OECD Test Guideline 414, rat, mouse, By inhalation)

Toxic effects for foetal development at toxic maternal doses
No teratogenic effects
NOAEL: 4,1 mg/l
Maternal concentration without effect: 4,1 mg/l

Specific target organ toxicity :

Single exposure :

Inhalation:

- In man :

Irritating to respiratory system.

Irritating to nose, throat and respiratory system (> 0,2 mg/l)

Repeated exposure:

- In animals :

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated exposure by inhalation: No adverse effects reported.

NOAEL= 3,7 mg/l (rat, 6 Weeks)

May be considered as comparable to a similar product for which experimental results are:

4-METHYLPENTAN-2-ONE :

- In man :

By inhalation: Muscular weakness, headache, Drowsiness, Nausea, Neurological disorders

- In animals :

By inhalation: No toxic effect directly extrapolated to humans

Target organs: Liver, Kidney, NOAEL= 1,84 mg/l (450 ppm) (rat, mouse, Repeated exposure, 2 y)

By oral route: No toxic effect directly extrapolated to humans

Target organs: Liver, Kidney, NOAEL= 250mg/kg bw/day (rat, Subchronic, 13 Weeks)

Aspiration hazard:

Not applicable

12. ECOLOGICAL INFORMATION

Acute toxicity

Fish:

Slightly harmful to fish

LC50, 96 h (Oncorhynchus mykiss) : 359 mg/l (Method: OECD Test Guideline 203)

NOEC, 96 h (Oncorhynchus mykiss) : 105 mg/l (Method: OECD Test Guideline 203)

Aquatic invertebrates:

Slightly harmful to daphnia

EC50, 48 h (Daphnia magna (Water flea)) : 337 mg/l (Method: OECD Test Guideline 202)

NOEC, 48 h (Daphnia magna (Water flea)) : 288 mg/l (Method: OECD Test Guideline 202)

Aquatic plants:

Slightly harmful to algae

EC r50, 96 h (Pseudokirchneriella subcapitata) : 334 mg/l (Method: OECD Test Guideline 201, Growth inhibition)

NOEC, 96 h (Pseudokirchneriella subcapitata) : 75,5 mg/l (Method: OECD Test Guideline 201, Growth inhibition)

Microorganisms:

No data available.

Activated sludge:

EC50, 3 h : > 100 mg/l (Method: OECD Test Guideline 209, Respiration inhibition of activated sludge)

Aquatic toxicity / Long term toxicity:

Aquatic invertebrates:

May be considered as comparable to a similar product for which experimental results are:

4-METHYLPENTAN-2-ONE :

NOEC, 21 d (Daphnia magna (Water flea)) : 30 - 35 mg/l (Method: OECD Test Guideline 211, Reproduction inhibition)

Persistence and degradability :

Biodegradation (In water):

Readily biodegradable

85 % after 28 d (Method: OECD Test Guideline 301 F)

Ratio BOD/COD:

0,91 % (BOD type: BOD5)

Bioaccumulative potential :

Bioaccumulation:

Slightly bioaccumulable.

Partition coefficient: n-octanol/water: log Kow : 1,57 , at 20 °C

Mobility in soil - Distribution among environmental compartments:

Absorption / desorption:

In soils and sediments: Slight adsorption , log Koc: 1,11 (Method: calculated)

Results of PBT and vPvB assessment :

This substance is not considered to be persistent, bioaccumulating, toxic (PBT), nor very persistent, very bioaccumulating (vPvB).

13. DISPOSAL CONSIDERATIONS

Waste treatment:

Disposal of product: When possible, recycling is preferred to disposal or incineration. Destroy the product by incineration (in accordance with local and national regulations).

Disposal of packaging: Destroy packaging by incineration at an approved waste disposal site. Clean container with water. Recover waste water for processing later.

14. TRANSPORT INFORMATION

Regulation	UN number	Proper shipping name	Class	Label	PG	Environmentally hazardous	Other information
ADR	2053	METHYL ISOBUTYL CARBINOL	3	3	III	no	
RID	2053	METHYL ISOBUTYL CARBINOL	3	3	III	no	
IATA Cargo	2053	Methyl isobutyl carbinol	3	3	III	no	
IATA Passenger	2053	Methyl isobutyl carbinol	3	3	III	no	
IMDG	2053	METHYL ISOBUTYL CARBINOL	3	3	III	no	EmS Number: F-E, S-D

15. REGULATORY INFORMATION

Safety data sheets: according to Regulation (EC) No. 1907/2006

Chemical Safety Assessment:

A Chemical Safety Assessment has been carried out for this substance.

INVENTORIES:

EINECS: Conforms to
TSCA: Conforms to
AICS: Conforms to
DSL: All components of this product are on the Canadian DSL list.
ENCS (JP): Conforms to
KECI (KR): Conforms to
PICCS (PH): Conforms to
IECSC (CN): Conforms to
NZIOC: Does not conform

16. OTHER INFORMATION

Full text of R, H, EUH-phrases referred to under sections 2 and 3

R10 Flammable.
R36/37/38 Irritating to eyes, respiratory system and skin.
H226 Flammable liquid and vapour.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Update:

Safety datasheet sections which have been updated:		Type:
2	Classification and labelling, Potential health effects, Environmental Effects, Physical and chemical hazards	Additions, Revisions
8	Derived No Effect Level (DNEL), Predicted No Effect Concentration (PNEC), Environmental exposure controls	Additions
8	Hand protection, Eye protection	Revisions
9	Autoignition temperature, Viscosity, dynamic, Explosive properties, Oxidizing properties	Additions
9	Odour, Flash point, Vapour pressure, Relative density, Density, Water solubility, Partition coefficient: n-octanol/water	Revisions
10	Hazardous decomposition products	Additions
11	Germ cell mutagenicity, Carcinogenicity, Reproductive toxicity	Additions
11	Acute toxicity, Skin contact, Eye contact, Specific Target Organ Toxicant	Revisions
12	Aquatic toxicity, Biodegradation, Bioaccumulation, Absorption / desorption, PBT assessment	Additions, Revisions
15	Chemical Safety Assessment	Additions

Thesaurus:

NOAEL : No Observed Adverse Effect Level (NOAEL)
LOAEL : Lowest Observed Adverse Effect Level (LOAEL)
bw : Body weight
food : oral feed
dw : Dry weight
vPvB : very Persistent and very Bioaccumulative
PBT : Persistent, Bioaccumulative and Toxic

This information applies to the PRODUCT AS SUCH and conforming to specifications of TransChem. In case of formulations or mixtures, it is necessary to ascertain that a new danger will not appear. The information contained is based on our knowledge of the product, at the date of publishing and it is given quite sincerely. Users are advised of possible additional hazards when the product is used in applications for which it was not intended. This sheet shall only be used and reproduced for prevention and security purposes. The references to legislative, regulatory and codes of practice documents cannot be considered as exhaustive. It is the responsibility of the person receiving the product to refer to the totality of the official documents concerning the use, the possession and the handling of the product. It is also the responsibility of the handlers of the product to pass on to any subsequent persons who will come into contact with the product (usage, storage, cleaning of containers, other processes) the totality of the information contained within this safety data sheet and necessary for safety at work, the protection of health and the protection of environment.

NB: In this document the numerical separator of the thousands is the "." (point), the decimal separator is "," (comma).
