

Product: **METHYL ISOBUTYL CARBINOL**

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SDS No.: 000169-001 (Version 3.0)

Date 06.05.2020 (*Cancel and replace* : 19.10.2011)

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Identification of the product

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

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

Use of the Substance/Mixture :

Sector of use :	Product category :
Distribution of the substance SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites, SU 8,9: Manufacture of bulk, large scale substances (including petroleum products); manufacture of fine chemicals	
Use in coating (industrial) SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)	
Formulation of the substance SU 10: Formulation [mixing] of preparations and/ or re-packaging (excluding alloys)	
Use in functional fluids (industrial) SU3: Industrial Manufacturing (all)	
Use in functional fluids (professional) SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Industrial use as an additive in lubricants and greases SU3: Industrial Manufacturing (all)	
Professional use as an additive in lubricants and greases SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Use in mining industry SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Polymers processing (industrial) SU3: Industrial Manufacturing (all)	
Polymers processing (professional) SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	
Use in Oil and Gas field drilling and production operations SU3: Industrial Manufacturing (all)	
Industrial use as laboratory reagent SU 3: Industrial uses: Uses of substances as such or in preparations at industrial sites	
Professional use as laboratory reagent SU 22: Professional uses: Public domain (administration, education, entertainment, services, craftsmen)	

1.3. Details of the supplier of the safety data sheet

Supplier	Transchem, Inc 2141 Palomar Airport Rd. Suite 125 Carlsbad, CA 92011 P: 760-431-6310 F: 760-431-6312
E-mail address : Exposure scenario	www.transcheminc.com

1.4. Emergency telephone number

1-800-255-3924 - CHEMTEL

2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008):

Flammable liquids, 3, H226
Eye irritation, 2, H319
Specific target organ toxicity - single exposure, 3, H335

Additional information:

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

2.2. Label elements

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; methyl isobutyl carbinol

Hazard
pictograms:



Signal word:

Warning

Hazard statements:

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

Supplemental information:

EUH066 Repeated exposure may cause skin dryness or cracking.

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 and protective clothing and eye protection and 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/doctor if you feel unwell.

Storage:

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

2.3. Other hazards

Potential health effects:

Irritation: Causes mild skin irritation. Severe eye irritation Irritating to respiratory system.
Inhalation: At high vapour/fog concentrations : headache Drowsiness Loss of consciousness
Skin contact: Skin penetration possible Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
Ingestion: Ingestion may cause irritation to mucous membranes.

Environmental Effects:

Readily biodegradable Bioaccumulation is unlikely.

Physical and chemical hazards:

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

Other:

Results of PBT and vPvB assessment : According to REACH regulation, annex XIII, the substance does not meet PBT and vPvB criteria.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Chemical name ¹	EC-No.	CAS-No.	Concentration	Classification REGULATION (EC) No 1272/2008
4-Methylpentan-2-ol (N° ANNEX: 603-008-00-8)	203-551-7	108-11-2	98,5 - 100 %	Flam. Liq.3; H226 Eye Irrit.2; H319 STOT SE3; H335

Hazardous impurities :

Chemical name ¹	EC-No.	CAS-No.	Concentration	Classification REGULATION (EC) No 1272/2008
4-methylpent-3-en-2-one (N° ANNEX: 606-009-00-1)	205-502-5	141-79-7	< 1 %	Flam. Liq.3; H226 Acute Tox.4 (Oral); H302 Acute Tox.3 (Inhalation); H331 Acute Tox.4 (Dermal); H312 Skin Irrit.2; H315 Eye Irrit.2; H319

¹: See chapter 14 for Proper Shipping Name
For the full text of the H, EUH-phrases mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

4.1. Description of necessary first-aid measures:

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.

4.2. Most important symptoms/effects, acute and delayed: No data available.

4.3. Indication of immediate medical attention and special treatment needed, if necessary: No data available.

5. FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media:

Water spray, Dry powder, Carbon dioxide (CO₂), Special foam for polar solvents

Unsuitable extinguishing media:

High volume water jet

5.2. 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

5.3. 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

6.1. 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.

6.2. 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.

6.3. 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).

6.4. Reference to other sections: None.

7. HANDLING AND STORAGE

7.1. 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.

7.2. 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)

7.3. **Specific end use(s):** None.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. **Control parameters:**

Exposure Limit Values

4-Methylpentan-2-ol

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
ACGIH (US)	02 2012	TWA	25	–	–
ACGIH (US)	02 2012	SKIN	–	–	Can be absorbed through the skin.
ACGIH (US)	02 2012	STEL	40	–	–

4-methylpent-3-en-2-one

Source	Date	Value type	Value (ppm)	Value (mg/m3)	Remarks
ACGIH (US)	02 2012	TWA	15	–	–
ACGIH (US)	02 2012	STEL	25	–	–

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:

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

8.2. **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

9.1. **Information on basic 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/m ³ , 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 (QSAR)
Auto-ignition temperature:	335 °C (Standard DIN 51794)
Decomposition temperature:	No data available.
Viscosity, dynamic:	4,074 - 4,116 mPa.s , at 25 °C
Explosive properties:	
Explosivity:	Not relevant (due to its chemical structure)
Oxidizing properties:	Not relevant (due to its chemical structure)

9.2. 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

10.1. **Reactivity:** No data available.

10.2. Chemical stability:

The product is stable under normal handling and storage conditions.

10.3. **Possibility of hazardous reactions:** No data available.

10.4. Conditions to avoid:

Keep away from heat and sources of ignition.

10.5. Incompatible materials to avoid:

Strong oxidizing agents, Strong acids

10.6. 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.

11.1. Information on toxicological effects:

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: **Causes mild skin irritation.**
• 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: **Causes serious eye irritation.**
• In man : Eye irritation (Exposure to vapours) (0,2 mg/l)
• In animals : Eye irritation (OECD Test Guideline 405, Rabbit)

Respiratory or skin sensitisation:

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 vapour/mist concentrations, Presence of: Tumors (2 years, By inhalation)
No Observed Adverse Effect Level (NOAEL): 1,84 mg/l

Target organs: Kidney (Method: OECD Test Guideline 453, Rat)
Target organs: Liver (Method: OECD Test Guideline 451, Mouse)

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: Absence of toxic effects on fertility, At high dose :, Effects on offspring
NOAEL (Parental toxicity): 4,1 mg/l
NOAEL (Fertility): 8,1 mg/l
NOAEL (Developmental Toxicity): 4,1 ppm, mg/l
(Method: OECD Test Guideline 416, Rat, By inhalation)

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: Absence of toxic effects for foetal development at non toxic maternal doses, No teratogenic effects
No observed adverse effect concentration (Developmental Toxicity): 4,1 mg/l
No observed adverse effect concentration (Maternal Toxicity): 4,1 mg/l
(Method: OECD Test Guideline 414, rat, mouse, By inhalation)

Specific target organ toxicity :

Single exposure :

Inhalation: **Irritating to respiratory system.**
• In man : 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 (450ppm) (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

Ecotoxicology Assessment:

All available and relevant data on this product and/or the components quoted in section 3 and/or the analogue substances/metabolites have been taken into account for the hazard assessment.

12.1. Acute toxicity :

Fish:

Slightly harmful to fish

LC50, 96 h (Oncorhynchus mykiss) : 359 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)

Aquatic plants:

Slightly harmful to algae

ErC50, 96 h (Pseudokirchneriella subcapitata) : 334 mg/l (Method: OECD Test Guideline 201)

Microorganisms:

EC50, 3 h (Activated sludge) : > 100 mg/l (Method: OECD Test Guideline 209)

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)

Aquatic plants:

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

12.2. Persistence and degradability :

Biodegradation (In water):

Readily biodegradable

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

12.3. Bioaccumulative potential :

Bioaccumulation:

Bioaccumulation is unlikely.

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

12.4. Mobility in soil - Distribution among environmental compartments:

Vapor pressure:

3,7 hPa, 20 °C

10 hPa, 30 °C

100 hPa, 71,9 °C

Absorption / desorption:

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

12.5. Results of PBT and vPvB assessment :

According to REACH regulation, annex XIII, the substance does not meet PBT and vPvB criteria.

12.6. Other adverse effects: None known.

13. DISPOSAL CONSIDERATIONS

13.1. 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	14.1. UN number	14.2. UN proper shipping name	14.3. Class ^{s*}	Label	14.4. PG [*]	14.5. Environmental hazards	14.6. Special precautions for user
ADR	2053	METHYL ISOBUTYL CARBINOL	3	3	III	no	
ADN	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

*Description: 14.3. Transport hazard class(es)
14.4. Packing group

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable

15. REGULATORY INFORMATION

Safety data sheets: accordance with Annex II of Regulation (EC) No 1907/2006 and its amendment(s)

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

15.2. Chemical safety assessment:

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

INVENTORIES:

- EINECS: Conforms to
TSCA: Conforms to
DSL: All components of this product are on the Canadian DSL
IECSC (CN): Conforms to
ENCS (JP): Conforms to
ISHL (JP): Conforms to
KECI (KR): Conforms to
PICCS (PH): Conforms to
AICS: Conforms to
NZIOC: Conforms to

16. OTHER INFORMATION

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

- H226 Flammable liquid and vapour.
H302 Harmful if swallowed.
H312 Harmful in contact with skin.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H331 Toxic if inhaled.
H335 May cause respiratory irritation.

Update:

Safety datasheet sections which have been updated:		Type:
3	Hazardous impurities	Additions
11	11. TOXICOLOGICAL INFORMATION	Revisions
12	12. ECOLOGICAL INFORMATION	Revisions
15	15. REGULATORY INFORMATION	Revisions

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 ARKEMA. 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).