

SAFETY DATA SHEET



2-Ethylhexanol
10050

Version / Revision
Supersedes Version

4.01
4.00***

Revision Date
Issuing date

05-Jul-2019
05-Jul-2019

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

1.1. Product identifier

Identification of the
substance/preparation

2-Ethylhexanol

Chemical Name 2-Ethylhexan-1-ol
CAS-No 104-76-7
EC No. 203-234-3
Registration number (REACH) 01-2119487289-20

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

Identified uses	Formulation Distribution of substance coatings cleaning agent Dilution of a concentrate Oil field drilling and production operations Functional Fluids laboratory chemicals Intermediate
Uses advised against	None

1.3. Details of the supplier of the safety data sheet

Company/Undertaking Identification **OXEA GmbH**
Rheinpromenade 4A
D-40789 Monheim
Germany***

Product Information Product Stewardship
FAX: +49 (0)208 693 2053
email: psq@oxea-chemicals.com

1.4. Emergency telephone number

Emergency telephone number +44 (0) 1235 239 671 (UK) available 24/7***

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

This substance is classified based on Directive 1272/2008/EC and its amendments (CLP Regulation)

Acute inhalation toxicity Category 4, H332
Skin corrosion/irritation Category 2, H315
Serious eye damage/eye irritation Category 2, H319
Target Organ Systemic Toxicant - Single exposure Category 3, H335

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Additional information

For full text of Hazard- and EU Hazard-statements see SECTION 16.

2.2. Label elements

Labelling according to Regulation 1272/2008/EC and its amendments (CLP Regulation).

Hazard pictograms



Signal word

Warning

Hazard statements

H332: Harmful if inhaled.
H315: Causes skin irritation.
H319: Causes serious eye irritation.
H335: May cause respiratory irritation.

Precautionary statements

P261: Avoid breathing gas/mist/vapours.
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.
P312: Call a POISON CENTRE/doctor if you feel unwell.

2.3. Other hazards

Vapour/air-mixtures are explosive at intense warming

Components of the product may be absorbed into the body by inhalation, ingestion and through the skin

PBT and vPvB assessment

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

SECTION 3: Composition / information on ingredients

3.1. Substances

Component	CAS-No	REACH-No	1272/2008/EC	Concentration (%)
2-Ethylhexan-1-ol	104-76-7	01-2119487289-20	Acute Tox. 4; H332 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335	> 99,5

For full text of Hazard- and EU Hazard-statements see SECTION 16.

SECTION 4: First aid measures

4.1. Description of first aid measures

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Inhalation

Keep at rest. Aerate with fresh air. When symptoms persist or in all cases of doubt seek medical advice.

Eyes

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses. Immediate medical attention is required.

Skin

Wash off immediately with soap and plenty of water. When symptoms persist or in all cases of doubt seek medical advice.

Ingestion

Call a physician immediately. Do not induce vomiting without medical advice.

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

Main symptoms

cough, headache, weakness, dizziness, gastrointestinal discomfort, nausea, unconsciousness, shortness of breath.

Special hazard

Lung irritation.

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

General advice

Remove contaminated, soaked clothing immediately and dispose of safely. First aider needs to protect himself.

Treat symptomatically. If ingested, irrigate the stomach using activated charcoal.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

foam, dry chemical, carbon dioxide (CO₂), water spray

Unsuitable Extinguishing Media

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Under conditions giving incomplete combustion, hazardous gases produced may consist of:

carbon monoxide (CO)

carbon dioxide (CO₂)

Combustion gases of organic materials must in principle be graded as inhalation poisons

Vapours are heavier than air and may spread along floors

Vapour/air-mixtures are explosive at intense warming

5.3. Advice for firefighters

Special protective equipment for firefighters

Fire fighter protection should include a self-contained breathing apparatus (NIOSH-approved or EN 133) and full fire-fighting turn out gear.

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Precautions for firefighting

Cool containers / tanks with water spray. Dike and collect water used to fight fire. Keep people away from and upwind of fire.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel: For personal protective equipment see section 8. Avoid contact with skin and eyes. Avoid breathing vapors or mists. Keep people away from and upwind of spill/leak. Ensure adequate ventilation, especially in confined areas. Keep away from heat and sources of ignition.

For emergency responders: Personal protection see section 8.

6.2. Environmental precautions

Prevent further leakage or spillage. Do not discharge product into the aquatic environment without pretreatment (biological treatment plant).

6.3. Methods and material for containment and cleaning up

Methods for containment

Stop the flow of material, if possible without risk. Dike spilled material, where this is possible.

Methods for cleaning up

Soak up with inert absorbent material. Keep in suitable, closed containers for disposal. If liquid has been spilt in large quantities clean up promptly by scoop or vacuum. Dispose of in accordance with local regulations. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours).

6.4. Reference to other sections

For personal protective equipment see section 8.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Advice on safe handling

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. Provide sufficient air exchange and/or exhaust in work rooms.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Advice on the protection of the environment

See Section 8: Environmental exposure controls.

Incompatible products

strong oxidizing agents

7.2. Conditions for safe storage, including any incompatibilities

Advice on protection against fire and explosion

Keep away from sources of ignition - No smoking. Take necessary action to avoid static electricity discharge

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(which might cause ignition of organic vapours). In case of fire, emergency cooling with water spray should be available. Ground and bond containers when transferring material. Vapour/air-mixtures are explosive at intense warming.

Technical measures/Storage conditions

Keep containers tightly closed in a cool, well-ventilated place. Handle and open container with care. Keep at temperatures between 0 and 49 °C (32 and 120 °F).

Suitable material

stainless steel***

Unsuitable material

None known***

Temperature class

T3

7.3. Specific end use(s)

Formulation

Distribution of substance

coatings

cleaning agent

Dilution of a concentrate

Oil field drilling and production operations

Functional Fluids

laboratory chemicals

Intermediate

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

Exposure limits Egypt

No exposure limits established.

Exposure limits Israel

No exposure limits established.

Exposure limits South Africa

No exposure limits established.

Exposure limits United Arab Emirates

No exposure limits established.

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Exposure limits Kuwait

No exposure limits established.

Note

For details and further information please refer to the original regulation.

Occupational Exposure Controls

8.2. Exposure controls

Appropriate Engineering controls

General or dilution ventilation is frequently insufficient as the sole means of controlling employee exposure. Local ventilation is usually preferred. Explosion-proof equipment (for example fans, switches, and grounded ducts) should be used in mechanical ventilation systems.

Personal protective equipment

General industrial hygiene practice

Avoid contact with skin, eyes and clothing. Do not breathe vapours or spray mist. Ensure that eyewash stations and safety showers are close to the workstation location.

Hygiene measures

When using, do not eat, drink or smoke. Take off all contaminated clothing immediately. Wash hands before breaks and immediately after handling the product.

Eye protection

Tightly fitting safety goggles. In addition to goggles, wear a face shield if there is a reasonable chance for splash to the face.

Hand protection

Wear protective gloves. Recommendations are listed below. Other protective material may be used, depending on the situation, if adequate degradation and permeation data is available. If other chemicals are used in conjunction with this chemical, material selection should be based on protection for all chemicals present.

Suitable material	nitrile rubber
Evaluation	according to EN 374: level 6
Glove thickness	approx 0,55 mm
Break through time	> 480 min
Suitable material	polyvinylchloride
Evaluation	Information derived from practical experience
Glove thickness	approx 0,8 mm

Skin and body protection

Impervious clothing. Wear face-shield and protective suit for abnormal processing problems.

Respiratory protection

Respirator with filter for organic vapour. Use the indicated respiratory protection if the occupational exposure limit is exceeded and/or in case of product release (dust). Equipment should conform to NIOSH, EN or other applicable national standards.

Environmental exposure controls

If possible use in closed systems. If leakage can not be prevented, the substance needs to be suck off at the emersion point, if possible without danger. Observe the exposure limits, clean exhaust air if needed. If recycling is not practicable, dispose of in compliance with local regulations. Inform the responsible authorities in case of leakage into the atmosphere, or of entry into waterways, soil or drains.

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SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance liquid @ 20 °C (68 °F)
Colour colourless
Odour slight
Odour threshold 0,08 ppm
pH 5,8 (0,9 g/l in water @ 20 °C (68 °F))
Melting point/range -89 °C (Pour point)
Boiling point/range 184 °C @ 1013 hPa
Flash point 77 °C
Method ISO 2719, @ 1013 hPa
Evaporation rate No data available
Flammability (solid, gas) Does not apply, the substance is a liquid
Lower explosion limit 0,79 Vol %
Upper explosion limit 12,7 Vol %

Vapour pressure

Values [hPa]	Values [kPa]	Values [atm]	@ °C	@ °F	Method
0,93	0,093	0,00091	20	68	OECD 104
3,8	0,38	0,003750	50	122	OECD 104

Vapour density 4,5 (Air = 1) @ 20 °C (68 °F)

Relative density

Values	@ °C	@ °F	Method
0,832	20	68	DIN 51757

Solubility 0,9 g/l @ 20 °C, in water, OECD 105

log Pow 2,9 (measured), OECD 117

Autoignition temperature 280 °C

Method DIN 51794

Decomposition temperature No data available

Viscosity 9,8 mPa*s @ 20 °C

Method DIN 51562

Oxidizing properties Not applicable

Explosive properties Does not apply, substance is not explosive. There are no chemical groups associated with explosive properties

9.2. Other information

Molecular weight 130,23

Molecular formula C8 H18 O

Dissoziation constant pKa 15,75 @ 20 °C (68 °F) (calculated) no dissociation at pH 4-9

Refractive index 1,431 @ 20 °C

Surface tension 47 mN/m (0,81 g/l @ 20°C (68°F)), OECD 115

SECTION 10: Stability and Reactivity

10.1. Reactivity

The reactivity of the product corresponds to the typical reactivity shown by the substance group as described in any text book on organic chemistry.

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10.2. Chemical stability

Stable under recommended storage conditions.

10.3. Possibility of hazardous reactions

Hazardous polymerisation does not occur.

10.4. Conditions to avoid

Avoid contact with heat, sparks, open flame and static discharge. Avoid any source of ignition.

10.5. Incompatible materials

strong oxidizing agents.

10.6. Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Likely routes of exposure Ingestion, Inhalation, Eye contact, Skin contact

Acute toxicity				
2-Ethylhexan-1-ol (104-76-7)				
Routes of Exposure	Endpoint	Values	Species	Method
Oral	LD50	~2047 mg/kg	rat, male	OECD 401
Dermal	LD0	> 3000 mg/kg	rat, male/female	OECD 402
Inhalative	LC50	> 0,89 - < 5,3 mg/l (4h)	rat, male/female	OECD 403

2-Ethylhexan-1-ol, CAS: 104-76-7

Assessment

The available data lead to the classification given in section 2

Irritation and corrosion

2-Ethylhexan-1-ol (104-76-7)				
Target Organ Effects	Species	Result	Method	
Skin	rabbit	severe irritation	OECD 404	4h
Eyes	rabbit	irritating	OECD 405	
Respiratory tract	human	irritating		

2-Ethylhexan-1-ol, CAS: 104-76-7

Assessment

The available data lead to the classification given in section 2

Sensitization

2-Ethylhexan-1-ol (104-76-7)				
Target Organ Effects	Species	Evaluation	Method	
Skin	Human experience	not sensitizing	Maximisation Test	

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2-Ethylhexan-1-ol, CAS: 104-76-7

Assessment

Based on available data, the classification criteria are not met for:

Skin sensitization

For respiratory sensitization, no data are available

Subacute, subchronic and prolonged toxicity

2-Ethylhexan-1-ol (104-76-7)

Type	Dose	Species	Method	
Subchronic toxicity	NOEL: 125 mg/kg/d (90d)	rat, male/female	OECD 408	Oral
Subchronic toxicity	NOAEL: 250 mg/kg/d (90d)	rat, male/female	OECD 408	Oral
Subchronic toxicity	NOEL: 125 mg/kg/d (90d)	mouse, male/female	OECD 408	Oral
Subchronic toxicity	NOAEL: 250 mg/kg/d (90d)	mouse, male/female	OECD 408	Oral
Subchronic toxicity	NOAEC: 120 ppm (90 d)	rat, male/female	OECD 413	Inhalation

2-Ethylhexan-1-ol, CAS: 104-76-7

Assessment

Based on available data, the classification criteria are not met for:

STOT RE

Carcinogenicity, Mutagenicity, Reproductive toxicity

2-Ethylhexan-1-ol (104-76-7)

Type	Dose	Species	Evaluation	Method	
Mutagenicity		Salmonella typhimurium	negative	OECD 471 (Ames)	In vitro study
Mutagenicity		Escherichia coli	negative	OECD 472	In vitro study
Mutagenicity		CHO (Chinese Hamster Ovary) cells	negative	OECD 473 (Chromosomal Aberration)	In vitro study
Mutagenicity		mouse lymphoma cells	negative	OECD 476 (Mammalian Gene Mutation)	In vitro study
Carcinogenicity	NOAEL 500 mg/kg/d	rat, male/female	negative	OECD 451, Oral	
Carcinogenicity	NOAEL 750 mg/kg/d	mouse		OECD 451, Oral	
Mutagenicity		CHO (Chinese Hamster Ovary) cells	negative	OECD 476 (Mammalian Gene Mutation)	In vitro study
Mutagenicity			negative	Weight of evidence	in vivo
Reproductive toxicity	NOAEL 10000 mg/kg/d	rat		OECD 416	Fertility read across
Reproductive toxicity	NOAEL 3000 mg/kg/d	rat		OECD 416	Maternal toxicity read across
Reproductive toxicity	NOAEL 3000 mg/kg/d	rat		OECD 416	Developmental toxicity read across

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Developmental Toxicity			negative	Weight of evidence	
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2-Ethylhexan-1-ol, CAS: 104-76-7

CMR Classification

The available data on CMR properties are summarized in the table above. They do not indicate a classification into categories 1A or 1B

Evaluation

In vitro tests did not show mutagenic effects

2-Ethylhexan-1-ol, CAS: 104-76-7

Main symptoms

cough, headache, weakness, dizziness, gastrointestinal discomfort, nausea, unconsciousness, shortness of breath.

Target Organ Systemic Toxicant - Single exposure

respiratory system

The available data lead to the classification given in section 2

Target Organ Systemic Toxicant - Repeated exposure

Stomach/intestinal disorders

Liver disorders

(peroxisome proliferation)

Based on available data, the classification criteria are not met for:

STOT RE

Aspiration toxicity

no data available

Other adverse effects

Components of the product may be absorbed into the body by inhalation, ingestion and through the skin.

Note

Handle in accordance with good industrial hygiene and safety practice. Further details on substance data can be found in the registration dossier under the following link:

<http://echa.europa.eu/information-on-chemicals/registered-substances>.

SECTION 12: Ecological information

12.1. Toxicity

Acute aquatic toxicity			
2-Ethylhexan-1-ol (104-76-7)			
Species	Exposure time	Dose	Method
Leuciscus idus (Golden orfe)	96h	LC50: 17,1 mg/l	84/449/EEC C.1
Pimephales promelas (fathead minnow)	96h	LC50: 28,2 mg/l	OECD 203
Daphnia magna (Water flea)	48h	EC50: 39 mg/l	84/449/EEC C.2
Desmodesmus subspicatus	72h	EC50: 11,5 mg/l (Biomass)	88/302/EEC C.3
Desmodesmus subspicatus	72h	EC50: 16,6 mg/l (Growth rate)	88/302/EEC C.3
Activated sludge (domestic)	24h	NOEC: > 300 mg/l	ETAD Fermentation tube method

Long term toxicity

2-Ethylhexan-1-ol (104-76-7)

Type	Species	Dose	Method	
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Aquatic toxicity	Scenedesmus subspicatus	EC10: 3,2 mg/l (72 h)	88/302/EEC C.3	
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12.2. Persistence and degradability

2-Ethylhexan-1-ol, CAS: 104-76-7

Biodegradation

100 % (14 d), activated sludge, OECD 301 C,
97 % (7 d), activated sludge, OECD 302 B (Zahn-Wellens Test).

Abiotic Degradation

2-Ethylhexan-1-ol (104-76-7)

Type	Result	Method
Hydrolysis	No data available	
Photolysis	Rate constant: $1,13 \times 10^{-11}$ cm ³ /(molecule x s) Atmospheric lifetime: 1,13 h	

12.3. Bioaccumulative potential

2-Ethylhexan-1-ol (104-76-7)

Type	Result	Method
log Pow	2,9	measured, OECD 117
BCF	25,3	calculated

12.4. Mobility in soil

2-Ethylhexan-1-ol (104-76-7)

Type	Result	Method
Adsorption/Desorption	Koc: 131,1 @ 20 °C	calculated
Surface tension	47 mN/m (0,81 g/l @ 20°C (68°F))	OECD 115

12.5. Results of PBT and vPvB assessment

2-Ethylhexan-1-ol, CAS: 104-76-7

PBT and vPvB assessment

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

12.6. Other adverse effects

2-Ethylhexan-1-ol, CAS: 104-76-7

No data available

Note

Avoid release to the environment.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

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Product Information

Disposal required in compliance with all waste management related state and local regulations. The choice of the appropriate method of disposal depends on the product composition by the time of disposal as well as the local statutes and possibilities for disposal.

Hazardous waste according to European Waste Catalogue (EWC)

Uncleaned empty packaging

Contaminated packaging should be emptied as far as possible and after appropriate cleansing may be taken for reuse.

SECTION 14: Transport information

Section 14.1 - 14.6

ADR/RID

Not restricted

ADN

ADN Container
Not restricted

ADN

ADN Tanker

14.1. UN number

ID 9003

14.2. UN proper shipping name

Substances with a flashpoint between 60 °C and not more than 100 °C (2-Ethylhexanol)

14.3. Transport hazard class(es)

9

Subsidiary Risk

N3, F

14.4. Packing group

-

14.5. Environmental hazards

no

14.6. Special precautions for user

no data available

ICAO-TI / IATA-DGR

Not restricted

IMDG

Not restricted

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

Product name

Octanol

Ship type

2

Pollution category

Y

SECTION 15: Regulatory information

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

Regulation 1272/2008, Annex VI

not listed

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International Inventories

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AICS (AU)^{***}
DSL (CA)^{***}
IECSC (CN)^{***}
EC-No. 2032343 (EU)^{***}
ENCS (2)-217 (JP)^{***}
ISHL (2)-217 (JP)^{***}
KECI KE-13766 (KR)^{***}
INSQ (MX)^{***}
PICCS (PH)^{***}
TSCA (US)^{***}
NZIoC (NZ)^{***}
TCSI (TW)^{***}

National regulatory information Egypt

Banned Chemicals (Unified List of Hazardous Substances, List A)

not listed

Substances Requiring Permits (Unified List of Hazardous Substances, List B)

not listed

Non-Restricted Substances (Unified List of Hazardous Substances, List C)

not listed

National regulatory information Israel

Harmful Chemicals (Hazardous Substances Law, 5753-1993, Annex 1)

not listed

Toxic Chemicals (Hazardous Substances Law, 5753-1993, Annex 2)

not listed

Hazardous materials requiring annual testing (Labor Inspection Regs., Appendix 1)

not listed

Hazardous Substances Regulations (Classification & Exemptions)

not listed

National regulatory information South Africa

Group 1 Hazardous Substances (G.N.R 452)

not listed

National regulatory information United Arab Emirates

Prohibited and restricted imports (Ministry of Environment and Water)

not listed

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For details and further information please refer to the original regulation.

SECTION 16: Other information

Full text of H-Statements referred to under sections 2 and 3

H315: Causes skin irritation.
H319: Causes serious eye irritation.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.

Abbreviations

A table of terms and abbreviations can be found under the following link:
http://echa.europa.eu/documents/10162/13632/information_requirements_r20_en.pdf

Training advice

For effective first-aid, special training / education is needed.

Sources of key data used to compile the datasheet

Information contained in this safety data sheet is based on Oxea owned data and public sources deemed valid or acceptable. The absence of data elements required by OSHA, ANSI or Annex II, Regulation 1907/2006/EC indicates, that no data meeting these requirements is available.

Further information for the safety data sheet

Changes against the previous version are marked by ***. Observe national and local legal requirements. For more information, other material safety data sheets or technical data sheets please consult the Oxea homepage (www.oxea-chemicals.com).

Disclaimer

For industrial use only. The information contained herein is accurate to the best of our knowledge. We do not suggest or guarantee that any hazards listed herein are the only ones which exist. Oxea makes no warranty of any kind, express or implied, concerning the safe use of this material in your process or in combination with other substances. User has the sole responsibility to determine the suitability of the materials for any use and the manner of use contemplated. User must meet all applicable safety and health standards.

End of Safety Data Sheet