

GPS Safety Summary

Substance Name:

2-Ethylhexanol

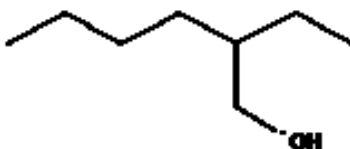
1. General Statement

2 Ethyl Hexanol is produced in the plant of Oxochimie in Lavera (France) by hydrogenation of 2-ethyl-hexanal, that is obtained by aldocrotonisation of n-butyraldehyde, itself obtained by "oxo" reaction on propylene (hydroformylation).

The main uses of 2-Ethylhexanol are solvent and intermediate for the manufacture of other chemicals.

2. Chemical Identity

Name:	2-Ethylhexanol
Brand names:	2-ETHYL HEXANOL
Chemical name (IUPAC):	2-Ethylhexan-1-ol
CAS number:	104-76-7
EC number:	203-234-3
Molecular formula:	C ₈ H ₁₈ O
Structure:	



3. Use and applications

2-Ethylhexanol has two main industrial uses:

- **Use as a chemical intermediate:**

2-Ethylhexanol is transformed into a variety of other chemicals, including 2-EthylHexyl Nitrate (2EHN), a cetane improver and DiEthylHexylPhthalate (DEHP), a plasticizer, or monomers such as 2-EthylHexyl Acrylate (2EHA). These ingredients are used in:

- diesel oil cetane improvement;
- plastic polymers plasticizing;
- construction adhesives and pressure-sensitive adhesives;
- water-based paints and coatings;
- coatings for textiles, wood and paper;
- manufacture of various plastics.

- **Other uses:**

2-Ethylhexanol and resulting mixtures are used in various products and processes as functional fluids (e.g. cable oils, transfer oils, coolants, insulators, refrigerants and hydraulic fluids), coating agents (e.g. paints, inks and adhesives), process chemicals (laboratories) or cleaning agents.

4. Physical / Chemical properties

2-Ethylhexanol is a combustible liquid organic substance with the following physicochemical properties:

Property	Value
Physical state	Liquid at 20°C and 1013 hPa
Colour	Colourless
Odour	Mild
Molecular weight	130.2 g/mol
Density	0.83 g/cm ³ at 20°C
Vapour pressure	0.48 hPa at 20 °C
Freezing / boiling points	-89°C / 184°C at 1013 hPa
Flash point – flammability	77°C at 1013 hPa – combustible liquid
Self-ignition temperature	280°C at 1017 hPa
Explosive / oxidizing properties	Not expected based on structure
Water solubility	0.9 g/L at 20°C
Octanol-water partition coefficient (Log K _{ow})	2.9 at 25°C

5. Health Effects

2-Ethylhexanol has a noteworthy odour which does not necessarily indicate a health hazard.

Like any reactive chemical, 2-Ethylhexanol can be hazardous if not handled properly.

Effect Assessment	Results
Acute Toxicity Oral / inhalation / dermal	May be harmful if swallowed or in contact with skin. Inhalation of vapour or mists is harmful.
Irritation / corrosion Skin / eye/ respiratory trac	Highly irritating to skin with local redness and swelling leading to scars. Irritating to eyes. Vapour or mists are irritating to the respiratory tract.
Sensitisation	Does not cause allergic skin reactions.
Toxicity after repeated exposure Oral / inhalation / dermal	Does not cause toxicity to internal organs after repeated exposure in animal studies. The predominant effect is local irritation.
Genotoxicity / Mutagenicity	The substance did not cause genetic damage when tested <i>in vitro</i> and <i>in vivo</i> .
Carcinogenicity	Not anticipated to cause cancer under conditions of normal use.

Reproductive / Developmental Toxicity	Did not cause birth defects in laboratory animals. No adverse effects were seen in the foetus at doses that were not toxic to the mother. No effects were seen on reproductive organs in long-term animal studies.
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6. Environmental Effects

In aquatic organisms, 2-Ethylhexanol is harmful after short-term exposure to fish, invertebrates and algae. Its long-term toxicity is low in algae (no data in fish and invertebrates).

2-Ethylhexanol is unlikely to persist in the environment since it biodegrades rapidly in sewage treatment plants. It is not expected to bind to soil or sediment due to its minimal adsorption coefficient ($\log K_{oc} = 1.4$). It is not expected to accumulate in the food chain, *i.e.*, the bioaccumulative potential is low due to the moderate octanol-water partition coefficient ($\log K_{ow} = 2.9$).

Effect Assessment	Result
Aquatic Toxicity	Acute: harmful. Chronic: not classified.

Fate and behaviour	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Not expected to bioaccumulate
PBT / vPvB conclusion	Not considered to be PBT* or vPvB**

*: Persistent, Bioaccumulative and Toxic (PBT)

** : Very Persistent and very Bioaccumulative (vPvB)

7. Exposure

7.1 Human health

Consumers:

The vast majority of uses involve chemical transformation into other substances with no consumer exposure to 2-Ethylhexanol.

Consumers may however be exposed to 2-Ethylhexanol when present in concentrates which are diluted before end-use (minor use).

Indirect exposure via the environment is negligible due to the biodegradability and low bioaccumulative potential.

Workers:

2-Ethylhexanol is industrially manufactured within closed systems or other processes minimizing the occupational exposure potential. Exposure may occur either in manufacturing facilities or in facilities using 2-Ethylhexanol. Workers may be exposed during cleaning, maintenance, transfer, sampling and analysis.

The industrial use as a chemical intermediate also occurs within closed systems or other processes minimizing exposure. The uses in concentrates and end mixtures for coatings or functional fluids may expose professionals; however any dermal exposure is prevented by use of gloves.

Procedures, controls, collective and personal risk management measures are in place, which limit the occupational exposure during the manufacture and use of the substance. Workers who might accidentally come into contact with the undiluted substance should follow the safety measures recommended in the Extended Safety Data Sheet.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the Extended Safety Data Sheet (see Chap. 8 and Exposure Scenarios).

7.2 Environment

2-Ethylhexanol is industrially manufactured and used in closed systems, in a continuous or batch process or chemically transformed into other substances, minimizing release to the environment. Potential releases may occur via wastewater and exhaust gases.

For industrial and professional uses, procedures, controls and risk management measures are in place, which limit the environmental exposure.

The main expected release compartment is water and to a lesser extent the atmosphere due to the high solubility and moderate volatility. Any release to wastewater would biodegrade rapidly in waste water treatment plants. Any remainder would partition to the sediment and soil or slowly evaporate.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the Extended Safety Data Sheet (see Chap. 8 and Exposure Scenarios).

8. Risk Management recommendations

Human health measures		
Organizational	Collect the latest available Safety Data Sheet. Implement good basic standards of occupational hygiene. Ensure operatives are well informed of the hazards and trained to minimise exposures. Handle and store according to the indications of the Safety Data Sheet.	
Engineering controls	Should be handled in well ventilated areas. Prevention of combustion should be in place. Provide appropriate local exhaust ventilation at points of emission. Ensure that eye- and handwash stations and safety showers are close to workstation locations.	
Protection	Eye/Face protection:	Tightly fitting safety goggles
	Skin protection:	Protective suit
	Hand protection:	PVC gloves
	Respiratory protection:	Respirator if ventilation is insufficient
Environment protective measures		
Do not release into the environment. Do not let product enter drains. Use waste water treatment systems.		

9. Regulatory Information / Classification and Labelling


9.1 Regulatory Information

This substance has notably been registered and assessed under:

- EU Regulation EC 1907/2006 (REACH)

9.2 Classification and labelling

Under GHS, substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. GHS attempts to standardize hazard communication so that the intended audience (workers, consumers, transport workers and emergency responders) can better understand the hazards of the chemicals in use. Substances registered for REACH are classified according to CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
<ul style="list-style-type: none">– Acute toxicity – Inhalation: Category 4.– Skin irritation: Category 2.– Eye irritation: Category 2A.– Specific target organ toxicity - single exposure (inhalation): Category 3.	
Signal word	
Warning	
Pictogram	
<ul style="list-style-type: none">– GHS07: Exclamation mark	
Hazard statements	
<ul style="list-style-type: none">– H332: Harmful if inhaled.– H315: Causes skin irritation.– H319: Causes serious eye irritation.– H335: May cause respiratory irritation.	
Additional classification according to Globally Harmonized System (GHS)	
<ul style="list-style-type: none">– Flammable liquids: Category 4; Combustible liquid.– Acute toxicity – Oral: Category 5; May be harmful if swallowed.– Acute toxicity – Dermal: Category 5; May be harmful in contact with skin.– Acute aquatic toxicity: Category 3; Harmful to aquatic life.	

10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

- **ICCA portal where the GPS Safety Summary is posted:**
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>
- Arkema-acrylics-reach-uses@arkema.com

11. Date of Issues / Revision

- Date of issue: 2012/08/30
- Date of revision:

12. Disclaimer

The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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