

GPS Safety Summary

Substance Name:

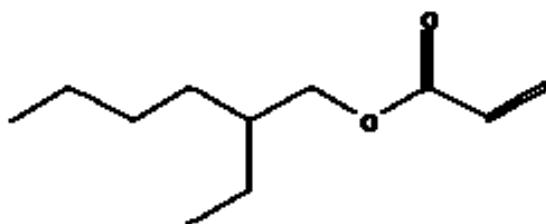
2-Ethylhexyl acrylate

1. General Statement

2-Ethylhexyl acrylate is a reactive material that will readily polymerise if not properly controlled by inhibitors. It is mostly used as a co-monomer. The resulting materials are ingredients used in coatings, elastomers, leather finishing, adhesives/sealants, plastics, textiles and inks.

2. Chemical Identity

| | |
|-------------------------------|--|
| Name: | 2-Ethylhexyl acrylate |
| Brand names: | NORSOCRYL [®] 2EHA |
| Chemical name (IUPAC): | Prop-2-enoic acid 2-ethylhexyl ester |
| CAS number: | 103-11-7 |
| EC number: | 203-080-7 |
| Molecular formula: | C ₁₁ H ₂₀ O ₂ |
| Structure: | |



3. Use and applications

2-Ethylhexyl acrylate's main industrial use is as a monomer for polymerisation. The polymers and co-polymers derived from 2-Ethylhexyl acrylate are used in:

- construction adhesives and pressure-sensitive adhesives;
- water-based paints and coatings;
- coatings for textiles, wood and paper;
- leather finishing, particularly for nubuck and suede;
- manufacture of various plastics.

2-Ethylhexyl acrylate is not sold to consumers.

4. Physical / Chemical properties

2-Ethylhexyl acrylate 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 | Sweet |
| Molecular weight | 184.3 g/mol |
| Density | 0.88 g/cm ³ at 20°C |
| Vapour pressure | 0.24 hPa at 25°C |
| Freezing / boiling points | -90°C / 215°C at 1013 hPa |
| Flash point - flammability | 86°C at 1013 hPa - combustible liquid |
| Self-ignition temperature | 252°C at 1013 hPa |
| Explosive / oxidizing properties | Not expected based on structure |
| Water solubility | 9.6 mg/L at 25°C |
| Octanol-water partition coefficient (Log K _{ow}) | ~4 at 20-25°C |

5. Health Effects

2-Ethylhexyl acrylate has a sweet odour which does not necessarily indicate a health hazard. Like any reactive chemical, 2-Ethylhexyl acrylate can be hazardous if not handled properly.

| Effect Assessment | Results |
|--|--|
| Acute Toxicity Oral / inhalation / dermal | May be harmful if swallowed. Ingestion may cause gastrointestinal irritation or ulceration. Limited dermal contact or vapour concentrations attainable at room temperature are not hazardous on single short duration exposures. |
| Irritation / corrosion Skin / eye/ respiratory tract | May cause moderate to severe skin irritation with local redness and swelling. Liquid may cause slight to moderate eye irritation which is reversible. Vapour or mists are irritating to the respiratory tract. |
| Sensitisation | May cause an allergic skin reaction: low sensitising potential by skin contact. |
| Toxicity after repeated exposure Oral / inhalation / dermal | The predominant effect is local irritation. Does not cause toxicity to internal organs after repeated exposure in animal studies. |
| Genotoxicity / Mutagenicity | Based on the available test data, not expected to cause genetic effects. |
| Carcinogenicity | Not anticipated to cause cancer under conditions of normal use. Animal studies involving skin exposure have shown evidence of skin tumours which were judged to be the result of chronic irritation. Listed as not classifiable as to its carcinogenicity to humans (Group 3) by the International Agency for Research on Cancer (IARC). |

| | |
|---------------------------------------|--|
| Reproductive / Developmental Toxicity | Did not cause birth defects in laboratory animals. Similar materials did not cause reproductive effects in laboratory animals. In addition, no effects were seen on reproductive organs in long-term animal studies. |
|---------------------------------------|--|

6. Environmental Effects

In aquatic organisms, 2-Ethylhexyl acrylate is acutely toxic to fish, invertebrates and algae and harmful to invertebrates and algae (no data in fish) upon long-term exposure.

2-Ethylhexyl acrylate is unlikely to persist in the environment since it biodegrades rapidly in sewage treatment plants. It is not expected to bind significantly to soil or sediment due to its moderate adsorption coefficient ($\log K_{oc} = 2.63$). If released to air, photochemical degradation is expected to occur within a few days. It is not expected to accumulate in the food chain, *i.e.*, the bioaccumulative potential is moderate due to the moderate octanol-water partition coefficient ($\log K_{ow} \sim 4$).

| Effect Assessment | Result |
|-------------------|---------------------------------|
| Aquatic Toxicity | Acute: toxic. Chronic: harmful. |

| 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:

Consumers are not directly exposed to 2-Ethylhexyl acrylate because it is transformed into other substances present in consumer products.

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

Workers:

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

The major use, polymerisation, also occurs within closed systems. A minor (<1‰ of the tonnage) professional use in formulated end products like coatings, road paints and adhesives may lead to some exposure, however any dermal exposure is prevented by use of gloves.

Overall, 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

Excluding the professional use in paints/coatings/adhesives, 2-Ethylhexyl acrylate is industrially manufactured and used in closed systems, in a continuous or batch process or consumed by polymerization or use as a process regulator, minimizing release to the environment. Potential releases may occur via wastewater and exhaust gases.

Overall, 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 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. The fraction reaching the atmosphere is expected to be photodegraded.

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 and unscheduled polymerization 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 | <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Eye/Face protection:</td> <td>Tightly fitting safety goggles</td> </tr> <tr> <td>Skin protection:</td> <td>Protective suit</td> </tr> <tr> <td>Hand protection:</td> <td>Neoprene gloves tested to EN374</td> </tr> <tr> <td>Respiratory protection:</td> <td>Respirator if ventilation is insufficient</td> </tr> </table> | Eye/Face protection: | Tightly fitting safety goggles | Skin protection: | Protective suit | Hand protection: | Neoprene gloves tested to EN374 | Respiratory protection: | Respirator if ventilation is insufficient |
| Eye/Face protection: | Tightly fitting safety goggles | | | | | | | | |
| Skin protection: | Protective suit | | | | | | | | |
| Hand protection: | Neoprene gloves tested to EN374 | | | | | | | | |
| Respiratory protection: | Respirator if ventilation is insufficient | | | | | | | | |
| Environment protective measures | | | | | | | | | |
| Do not release into the environment. Do not let product enter drains. Incinerate any waste. Use waste water treatment systems. Do not spread sludge to soil. | | | | | | | | | |

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">– Skin irritation: Category 2– Specific target organ toxicity - single exposure (inhalation): Category 3– Skin sensitization: Category 1– Chronic aquatic toxicity: Category 3 | |
| Signal word | |
| Warning | |
| Pictogram | |
| <ul style="list-style-type: none">– GHS07: Exclamation mark |  |
| Hazard statements | |
| <ul style="list-style-type: none">– H315: Causes skin irritation.– H335: May cause respiratory irritation.– H317: May cause an allergic skin reaction.– H412: Harmful to aquatic life with long lasting effects. | |
| 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 aquatic toxicity: Category 2; Toxic 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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