

GPS Safety Summary

Substance Name:

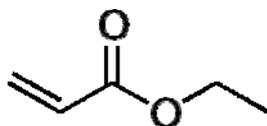
Ethyl acrylate

1. General Statement

Ethyl acrylate is a reactive material that will readily polymerise if not properly controlled by inhibitors. It is mostly used as a co-monomer and as a chemical intermediate to produce other monomers and molecules. The resulting materials are ingredients used in coatings, elastomers, water treatment, leather finishing, adhesives/sealants, thickeners, surfactants, fibers, plastics, textiles, inks and pharmaceutical intermediates.

2. Chemical Identity

| | |
|-------------------------------|--|
| Name: | Ethyl acrylate |
| Brand names: | NORSOCRYL® EA |
| Chemical name (IUPAC): | Ethyl prop-2-enoate |
| CAS number: | 140-88-5 |
| EC number: | 205-438-8 |
| Molecular formula: | C ₅ H ₈ O ₂ |
| Structure: | |



3. Use and applications

Ethyl acrylate has two main industrial uses:

- **Use as a chemical intermediate:**
 Ethyl acrylate is transformed into a variety of other chemicals, such as Dimethylaminoethyl acrylate (DMAEA). These ingredients are used in:
 - chemical and pharmaceutical intermediates;
 - waste water treatment chemicals.
- **Use as monomer for polymerisation:**
 The polymers and co-polymers derived from Ethyl acrylate are used in:
 - water-based paints and coatings;
 - construction adhesives and pressure-sensitive adhesives;
 - coatings for textiles, wood and paper;
 - leather finishing, particularly for nubuck and suede;
 - manufacture of various plastics;
 - manufacture of thickeners for industries.

Ethyl acrylate is not sold to consumers.

4. Physical / Chemical properties

Ethyl acrylate is a highly flammable, volatile liquid organic substance with the following physicochemical properties:

| Property | Value |
|--|--|
| Physical state | Liquid at 20°C and 1013 hPa |
| Colour | Colourless |
| Odour | Acrid, pungent |
| Molecular weight | 100.1 g/mol |
| Density | 0.92 g/cm ³ at 20°C |
| Vapour pressure | 40 hPa at 20.9°C |
| Freezing / boiling points | -71.2°C / 99.8°C at 1013 hPa |
| Flash point – flammability | 9°C at 1013 hPa – highly flammable liquid and vapour |
| Self-ignition temperature | 372°C at 1013 hPa |
| Explosive / oxidizing properties | Not expected based on structure |
| Water solubility | 20 g/L at 20°C |
| Octanol-water partition coefficient (Log K _{ow}) | 1.18 at 25°C |

5. Health Effects

Ethyl acrylate is a hazardous chemical which should be handled with care.

| Effect Assessment | Results |
|--|---|
| Acute Toxicity Oral / inhalation / dermal | Harmful if swallowed. It may result in gastrointestinal irritation or ulceration. Prolonged or widespread skin contact may result in skin burns or absorption of harmful amounts. Vapor concentrations are attainable that could be hazardous on single exposure. |
| Irritation / corrosion Skin / eye/ respiratory tract | May cause severe skin irritation with pain, local redness, and tissue damage. Liquid may cause severe eye irritation and severe corneal damage. Contact may also cause pain greater than expected given the level of irritation. High vapor concentrations may cause severe irritation to upper respiratory tract (nose and throat) and lungs. |
| Sensitisation | May cause an allergic skin reaction: low sensitizing potential by skin contact. |
| Toxicity after repeated exposure Oral / inhalation / dermal | The predominant effect is local irritation. Does not cause compound-specific 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. Studies involving skin exposure, drinking water administration and inhalation have not shown evidence of cancer. Has caused stomach tumors in some lifetime laboratory animal studies in which severe stomach irritation was also seen. Tumors were judged to be the result of chronic irritation. Listed as a possible carcinogen by the International Agency for Research on Cancer (IARC). The US NTP initially listed EA as “reasonably anticipated to cause cancer in humans” and later withdrew its cancer classification. |
| 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, Ethyl acrylate is acutely toxic to fish, invertebrates and algae and harmful to invertebrates and algae (no data in fish) upon long-term exposure.

Ethyl 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 low adsorption coefficient ($0.59 < \log K_{oc} < 1.93$). If released to air, photochemical degradation is expected to occur within days. It is not expected to accumulate in the food chain, *i.e.*, the bioaccumulative potential is low due to the low octanol-water partition coefficient ($\log K_{ow} = 1.18$ at 25 °C).

| 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 Ethyl acrylate because it is transformed into other substances (polymers) present in consumer products.

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

Workers:

Ethyl acrylate is industrially manufactured and used within closed systems or batch

processes, minimizing the occupational exposure potential. Exposure may occur either in manufacturing facilities or in facilities using Ethyl acrylate. Workers may be exposed during cleaning, maintenance, transfer, mixing, sampling and analysis.

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

Ethyl acrylate is industrially manufactured and used within closed systems or batch processes. Furthermore, its main uses (polymerisation and use as an intermediate) result in its consumption, minimizing release to the environment. Potential releases may occur via wastewater and exhaust gases.

Procedures, controls and risk management measures are in place, which limit the environmental exposure.

The main expected release compartment is the atmosphere due to the volatility. Any released amount is expected to be photodegraded. Distribution to wastewater is expected to be moderate and any release would biodegrade rapidly in waste water treatment plants while the non-degraded remainder would ultimately evaporate to the atmosphere.

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 inflammation and unscheduled polymerisation 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="background-color: #e0f7fa;">Eye/Face protection:</td> <td>Tightly fitting safety goggles</td> </tr> <tr> <td style="background-color: #e0f7fa;">Skin protection:</td> <td>Protective suit</td> </tr> <tr> <td style="background-color: #e0f7fa;">Hand protection:</td> <td>Neoprene gloves tested to EN374</td> </tr> <tr> <td style="background-color: #e0f7fa;">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)
- OECD SIDS (Screening Information Data Set) program

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">– Flammable liquids: Category 2.– Acute toxicity - Inhalation: Category 4.– Acute toxicity - Dermal: Category 4.– Acute toxicity - Oral: Category 4.– Skin irritation: Category 2.– Eye irritation: Category 2.– Specific target organ toxicity - single exposure (inhalation): Category 3.– Skin sensitization: Category 1.– Chronic aquatic toxicity: Category 3. | |
| Signal word | |
| Danger | |
| Pictograms | |
| <ul style="list-style-type: none">– GHS02: Flame |  |
| <ul style="list-style-type: none">– GHS07: Exclamation mark |  |
| Hazard statements | |
| <ul style="list-style-type: none">– H225: Highly flammable liquid and vapour.– H332: Harmful if inhaled.– H312: Harmful in contact with skin.– H302: Harmful if swallowed.– H315: Causes skin irritation.– H319: Causes serious eye 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">– 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: 2012-09-04
- 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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