GPS Safety Summary

Acrylic Acid

Chemical Identity

Name: acrylic acid

CAS number: 79-10-7

Molecular formula: C₃H₄O₂

IUPAC name: acrylic acid

BASF brand names:

Glacial Acrylic Acid

Structure

For synonyms see end of document

Product Uses

Acrylic acid is used in the production of esters, polymers and specialty products. It can spontaneously polymerize evolving heat and pressure. Therefore it is usually supplied with an inhibitor to prevent unintended reactions. The chemicals produced using acrylic acid, are primarily used as reactive building blocks to produce polymers, coatings and inks, adhesives, sealants, textiles, plastics and elastomers. Specifically, acrylic acid is used in the following applications:

- **Chemical intermediates**: for a variety of chemical products.
- **Coatings**: as a building block in the synthesis of polymers that are used in latex coatings, floor polishes, lacquers, sealers, textile sizing, textile and leather finishing products.
- **Polymerization and formulation**: as a building block in the manufacture of thermoplastics, the production of resins, rubbers, sealants, and also to produce superabsorbent polymers for use in personal care products and soil conditioning.

Acrylic acid is not sold for direct consumer use, but it is used as a raw material to make a variety of goods used by consumers or construction personnel and could be present in trace amounts as residual monomer in consumer products.
Health Information

Human Health Safety Assessment
Note: The information contained in the table below may be useful to someone handling the concentrated substance such as a manufacturer or transporter. Consumers are not likely to come in contact with the concentrated substance. The data, while verifiable, are not intended to be comprehensive nor replace the data found in the (M)SDS.

<table>
<thead>
<tr>
<th>Effect Assessment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Toxicity</td>
<td>Based on animal studies, acrylic acid is considered harmful if swallowed or inhaled. Swallowing of concentrated solutions can result in severe gastrointestinal irritation or ulceration and burns of the mouth and throat. Concentrations that are not corrosive are of low toxicity. Vapor concentrations attainable at room temperature are not immediately hazardous; however, exposures of an hour or more can lead to injury or death.</td>
</tr>
<tr>
<td>Irritation / corrosion</td>
<td>Causes severe skin irritation with local redness, swelling and chemical burns and destruction of tissues. Liquid can cause severe irritation and serious damage to eyes, even blindness. Vapor or mists are severely irritating to the respiratory tract.</td>
</tr>
<tr>
<td>Sensitization</td>
<td>Does not cause an allergic skin reaction.</td>
</tr>
<tr>
<td>Toxicity after repeated exposure</td>
<td>Does not cause toxicity to internal organs after repeated exposure in animal studies. The predominant effect is local irritation. The degree of irritation depends on the concentration of the product and the duration of exposure.</td>
</tr>
<tr>
<td>Genotoxicity / Mutagenicity</td>
<td>Based on the available test data, not expected to cause genetic effects.</td>
</tr>
<tr>
<td>Carcinogenicity</td>
<td>Did not cause tumors in long term animal studies.</td>
</tr>
<tr>
<td>Toxicity for reproduction</td>
<td>Did not cause birth defects or adverse reproductive effects or damage to reproductive organs in laboratory animals.</td>
</tr>
</tbody>
</table>
Environmental Information

Environment Safety Assessment
Note: The information in this chapter is intended to provide brief and general information of this substance’s environmental impact. The results in the table below refer to testing performed with the concentrated substance. The data contained in this section explain the relative effect of the concentrated substance on the environment, as defined by certain tests.

<table>
<thead>
<tr>
<th>Effect Assessment</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aquatic Toxicity</td>
<td>Very toxic to aquatic organisms</td>
</tr>
<tr>
<td></td>
<td>Toxic to aquatic life with long lasting effects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fate and Behavior</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Biodegradation</td>
<td>Readily biodegradable</td>
</tr>
<tr>
<td>Bioaccumulation potential</td>
<td>Not expected to bioaccumulate</td>
</tr>
<tr>
<td>PBT / vPvB conclusion</td>
<td>Not considered to be either PBT nor vPvB</td>
</tr>
</tbody>
</table>

Physical/Chemical Properties

Phys/Chem Safety Assessment

- Acrylic acid is a colorless liquid with nauseating odor. It is a flammable liquid but does not have explosive properties.

Note: The results in the table below refer to testing performed with the concentrated substance. It is not intended to be comprehensive or to replace information found in the (M)SDS.

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Liquid</td>
</tr>
<tr>
<td>Color</td>
<td>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>Acrid, pungent</td>
</tr>
<tr>
<td>Density</td>
<td>1.05 g/mL @ 20°C</td>
</tr>
<tr>
<td>Melting / boiling point</td>
<td>13°C / 141°C @ 1013 hPa</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not flammable. The substance has no pyrophoric properties and does not liberate flammable gases on contact with water.</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>Non explosive</td>
</tr>
<tr>
<td>Self-ignition temperature</td>
<td>438°C at 1013 hPa</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>5.29 hPa @ 25°C</td>
</tr>
</tbody>
</table>
Molecular weight 72.06
Water solubility 1000 g/l at 25° C
Flash point 48.5 °C at 1013 hPa
Octanol-water partition coefficient (Log Pow) 0.46 @ 25°C; pH >1

Exposure Potential

- **Workplace exposure:** Exposure can occur either in an acrylic acid manufacturing facility or in the various industrial or manufacturing facilities that use it. It is produced, distributed, stored and consumed in closed systems. Those working with acrylic acid in manufacturing operations could be exposed during maintenance, sampling, testing, manual transfer, or other procedures.

- **Consumer exposure:** Acrylic acid is not sold for direct consumer use, but it is used as a raw material to make a variety of goods used by consumers or construction personnel and could be present in trace amounts as residual monomer in consumer products, including paints.

- **Environmental exposure:** Potential releases into the environment are limited and for the most part occur only during production and processing, typically via wastewater and exhaust gases. If accidentally released to surface water, it rapidly biodegrades and will not persist in the environment and will not accumulate in the food chain. Conclusively, all identified uses are safe for the environment based on the scientific facts summarized above and when carried out in compliance with recommended risk management measures and applicable regulations.

Recommended Handling Measures

*The recommended safety measures generally apply in contact with the concentrated substance. It is NOT intended to replace the comprehensive guidance found in the (M)SDS, only supplement it. Please refer to the (M)SDS for specific safety and first aid measures.*

**Industrial Manufacturing and Processing**

In industrial manufacturing and processing applications, it is always important to obtain a current Safety Data Sheet from your supplier, follow the guidance provided, and comply with applicable regulations.
Acrylates and products containing them should always be handled in well ventilated areas. Each manufacturing facility should have a thorough training program for employees, appropriate work processes, and safety equipment in place to limit unnecessary exposure.

In the event of a spill, the focus is on containing the spill to prevent contamination of soil, ditches, sewers, or surface or ground water. Only trained and properly protected personnel should be involved in clean-up operations.

**Professional Applications**
Before using any chemical product, the user should be properly trained in safe handling procedures for that product. This means that they should always contact the supplier of the product being used to obtain the most current safe handling advice and follow all instructions and warnings.

**Consumer Applications**
It is important to read and follow all warnings and instructions on the product label or packaging.

**Regulatory Information / Classification and Labeling**

Under GHS substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the (M)SDS. 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.

*Note: The hazard statements and symbols presented here refer to the hazard properties of the concentrated substance and are meant to provide a brief overview of the substance’s labeling. It is not intended to be comprehensive or to replace information found in the (M)SDS.*

**Labeling according to UN GHS**
UN GHS is the basis for country specific GHS labeling

![Signal word and hazard statements]

**Signal word:**
Danger

**Hazard statements:**
H226: Flammable liquid and vapor.
H302: Harmful if swallowed.
H312: Harmful in contact with skin.
H314: Causes severe skin burns and eye damage.
H332: Harmful if inhaled.
H335: May cause respiratory irritation.
H400: Very toxic to aquatic life.
H410: Very toxic to aquatic life with long lasting effects.

Additional information

1. IFA GESTIS-database on hazardous substances
   http://www.dguv.de/ifa/en/gestis/stoffdb/index.jsp

2. Information on registered substance (ECHA)

Most commonly used synonyms

» Acrylsaëure
» 2-Propenoic acid (9CI)
» Acroleic acid
» Ethylene-carboxylic acid
» Propenoic acid
» Acrylic acid (6CI, 7CI, 8CI)
» Vinylformic acid

Disclaimer

This Product Safety Summary is intended to provide a general overview of the chemical substance. It contains basic information and is not intended to provide emergency response information, medical information or treatment information. The summary cannot be relied on to provide in-depth safety and health information. In-depth safety and health information must be obtained from the Material Safety Data Sheet ((M)SDS) for the chemical substance.

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Contact

For further information on this substance or GPS safety summaries in general, please contact: info.gps@basf.com