

BASIC ACRYLIC MONOMER MANUFACTURERS, INC.

GLOBAL PRODUCT SUMMARY: 2-HYDROXYETHYL ACRYLATE

(Last Updated: 4-6-24)

[Disclaimer](#)

SUBSTANCE NAME

2-hydroxyethyl acrylate

GENERAL STATEMENT

2-hydroxyethyl acrylate (HEA) is a colorless volatile liquid with a sweetish odor. It is used in the preparation of solid polymers, dispersions, and polymer solutions, which are used as binders, film formers, adhesives, and sealants, coatings in various industries.

CHEMICAL IDENTITY

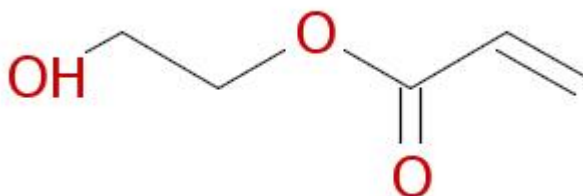
Name: 2-hydroxyethyl acrylate

Chemical name (IUPAC): 2-hydroxyethyl acrylate

Synonym: 2-Propenoic acid, 2-hydroxyethyl ester

CAS number(s): 818-61-1

Molecular formula: C₅H₈O₃



Structure:

USES AND APPLICATIONS

Acrylate esters, the family of chemicals to which HEA belongs, are used as reactive building blocks (monomer). They are primarily used to produce polymers used in coatings and inks, adhesives, sealants, textiles, and plastics. 2-Hydroxyethyl acrylate is a highly reactive substance and should only be used under controlled conditions in industrial settings.

2-Hydroxyethyl acrylate (HEA) is not sold for direct consumer use but is used as a raw material to make a variety of goods used by consumers or construction personnel, including those listed above. HEA can be present in trace amounts as residual monomer in consumer/finished products, including paints.

PHYSICAL/CHEMICAL PROPERTIES

The following table includes information which refers to testing performed with the concentrated substance. It is not intended to be comprehensive or to replace information found in the Safety Data Sheet (SDS). A Safety Data Sheet may be obtained from one of the manufacturers.

Property	Value
Physical state	Liquid (at room temperature)
Color	Colorless
Odor	ester-like, mild pungent
Density	1.0981 g/cm ³ @ 30 °C.
Melting / boiling point	<-60°C / 200.32°C @ atmospheric pressure
Flammability	Hardly combustible
Explosive properties	Based on the chemical structure there is no indication of explosive properties
Self-ignition temperature	370°C @ atmospheric pressure
Vapor pressure	0.1 hPa @ 21.4°C
Molecular weight	116.1152
Water solubility	miscible
Flash point	101 °C @ atmospheric pressure (cc)
Octanol-water partition coefficient (Log Pow)	-0.17 @ 25°C

HUMAN HEALTH SAFETY ASSESSMENT

Information for the general population and consumers handling products made with butyl acrylate.

HEA has an ester-like, mild pungent odor that may be bothersome. However, the smell of acrylates does not necessarily indicate a health hazard.

Like any reactive chemical, 2-hydroxyethyl acrylate (HEA) can create hazards if not handled properly. The primary hazards with HEA are from contact of the skin or oral uptake. HEA is Harmful after skin contact or if swallowed. Inhalation of a highly enriched/saturated vapor-air-mixture represents an unlikely acute hazard. HEA is corrosive to skin and eyes. Repeated skin contact may cause allergic reactions. Animal studies have not indicated that HEA causes cancer, specific target organ toxicity except for local effects or reproductive/developmental toxicity.

The following table includes information for someone handling the concentrated substance. The data, while verifiable, are not intended to be comprehensive nor replace the information found in the SDS.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Harmful after skin contact and if swallowed. The inhalation of a highly enriched/saturated vapor-air-mixture represents an unlikely acute hazard.
Irritation / corrosion Skin / eye/ respiratory tract	Corrosive, may cause serious damage to skin and eyes.
Sensitization	May cause an allergic skin reaction.
Toxicity after repeated exposure Oral / inhalation / dermal	After repeated exposure the predominant effect is local irritation. The degree of irritation depends on the concentration of the product and the duration of exposure.
Genotoxicity / Mutagenicity	Based on the available test data, not expected to cause genetic effects.
Carcinogenicity	Did not cause cancer in long term animal studies.
Toxicity for reproduction	No adverse effects were seen in the fetus at doses that were not toxic to the mother. Did not cause reproductive effects in laboratory animals

ENVIRONMENTAL SAFETY ASSESSMENT

After evaporation or exposure to air, HEA will be rapidly degraded by photochemical processes. HEA has an estimated half-life in air of ~25.33 hours.

In contact with water at neutral pH no hydrolysis of HEA will be observed. In alkaline water, HEA will hydrolyse rapidly. Hydrolysis is not the predominant degradation process since HEA is readily biodegradable. Therefore, hydrolysis will not contribute significantly to the degradation of HEA under environmental conditions.

The biodegradability of HEA was determined to be approximately 78 % after 28 days. Therefore, HEA is considered to be readily biodegradable.

Based on the log Pow (-0.17) of HEA bioaccumulation is not expected.

Adsorption of HEA to solid soil phase is not expected. From water surface, HEA will not evaporate into the atmosphere. Over time, HEA will mainly distribute into water (ca. 99.9%).

Acute toxicity data in freshwater organisms are available for all three trophic levels (fish, aquatic invertebrates and algae). Effect values were all in the same range of concentrations, i.e. between 4.8 and 9.3 mg/L, indicating a toxic effect to aquatic organisms.

In addition, a 21-day chronic life-cycle study with *Daphnia magna* is available with HEA with a respective NOEC of 0.86 mg/L.

Concerning toxicity to microorganisms, the 72-h EC10 value is >100 mg/L as observed in a Microbiological Inhibition Test.

The following tables include information for testing performed with the concentrated substance. Additional information may be obtained from a manufacturer's SDS.

Effect Assessment	Result
Aquatic Toxicity	Toxic to aquatic organisms. Harmful to aquatic life with long lasting effects. The inhibition of the degradation activity of activated sludge is not anticipated when introduced to biological treatment plants in appropriate low concentrations.

Fate and behavior	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Not expected to bioaccumulate
PBT / vPvB conclusion	Not considered to be either PBT nor vPvB

* Persistent/Bioaccumulative/Toxic (PBT) very Persistent-very Bioaccumulative (vPvB)

EXPOSURE

Human health

HEA is used in the production of industrial and consumer products.

- **Workplace exposure** – Exposure can occur either in a HEA manufacturing facility or in the various industrial or manufacturing facilities that use HEA. It is produced, distributed, stored and reacted in closed systems. Those working with HEA in manufacturing operations could be exposed during maintenance, sampling, testing, manual transfer, or other procedures. Workplace exposure is controlled by the use of proper industrial handling procedures and safety equipment.
- **Consumer exposure to products containing HEA** – HEA 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.

Environment

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.

RISK MANAGEMENT RECOMMENDATIONS

Industrial Manufacturing and Processing

In industrial manufacturing and processing applications, it is always important to obtain a current Safety Data Sheet (SDS) 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

This substance is subject to a number of federal and international statutes and regulations. Selected U.S. regulatory information is available on the [BAMM website](#). Other federal, state and local regulations may apply.

This substance has been registered under EU chemical control law known as REACH (Registration, Evaluation, Authorisation and Restriction of Chemical substances), and is listed on various chemical inventories. It has been reviewed under the OECD SIDS (Screening Information Data Set) program.

While the toxicological data are not specific to a particular region, the regulatory frameworks differ between countries and regions. The Global Harmonized System managed by the United Nations (UN-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.

Under the UN-GHS, substances are classified according to their physical, health, and environmental hazards.

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 labelling. It is not intended to be comprehensive or to replace information found in the SDS.

Signal word: Danger

Hazard pictogram:

GHS05: danger



GHS07: exclamation mark



GHS Classifications	Hazard Statements
Acute Oral Toxicity Category 4	H302: Harmful if swallowed.
Acute Dermal Toxicity Category 4	H312: Harmful in contact with skin.
Skin Irritation Category 1B	H314: Causes severe skin burns and eye damage.
Skin Sensitization Category 1	H317: May cause an allergic skin reaction.
Aquatic Acute Category 2	H401: Toxic to aquatic life.
Aquatic Chronic Category 3	H412: Harmful to aquatic life with long lasting effects.

ADDITIONAL INFORMATION

Information on registered substance (ECHA)

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

IFA GESTIS-database on hazardous substances

<https://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>

International Chemical Safety Card

<http://www.inchem.org/documents/icsc/icsc/eics1723.htm>

OECD SIDS

https://hpvchemicals.oecd.org/UI/SIDS_Details.aspx?key=df223046-8b1c-4604-a694-c5c47d2a37e3&idx=0

CONTACT

For further information on this substance or product safety summaries in general, please contact BMM. Click on a logo below to go to the company's website.

The logo for ARKEMA, with 'ARKE' in dark blue and 'MA' in green.

Glossary

Acute toxicity - harmful effects after a single exposure

Bioaccumulation - accumulation of substance in an organism

Biodegradation- chemical breakdown of substances by a physiological environment

Carcinogenicity - effects causing cancer

Chronic toxicity - harmful effects after repeated exposures

Clastogen - a substance that causes breaks in chromosomes

Embryotoxicity - harmful effects on fetal health

EU - European Union

eSDS -Extended Safety Data Sheet

GHS -Global Harmonized System managed by the United Nations (UN-GHS)

Hazard - situation bearing a threat to health and environment

HPV-High Production Volume

ICCA-International Council of Chemical Associations

Mutagenicity - effects that change genes

OECD-Organisation for Economic co-operation and Development

Concentrated - Non-formulated undiluted substance

REACH-Registration, Evaluation, Authorisation and Restriction of Chemical substances

Reprotoxicity - combining teratogenicity, embryotoxicity and harmful effects on fertility

SIDS - Screening Inventory Data set

SDS-Safety Data Sheet

Sensitizing - causes allergies

Teratogenic - effects on fetal morphology

PBT / vPvB-Persistent, Bioaccumulative and Toxic/ Very Persistent and Very Bioaccumulative

Disclaimer

This document is not intended to be comprehensive. It is provided solely as background information and should not substitute for an up-to-date Safety Data Sheet or research should specific regulatory or other legal questions arise. It is not intended to be a statement of legal requirements when using or handling acrylates. Although the information is believed to be accurate as of the last update, new information may become available and regulations frequently change, and no warranty, expressed or implied, is made concerning the contents. In addition, many states and localities adopt their own regulations, which are not covered by this summary or on the [BAMM website](#). In all events, the user should consult applicable laws and regulations, as well as their supplier's Safety Data Sheet, for current information and requirements. **NO WARRANTY OF FITNESS FOR ANY PARTICULAR PURPOSE, WARRANTY OF MERCHANTABILITY, OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, IS MADE CONCERNING THE INFORMATION PROVIDED HEREIN.**