

# METHACRYLATE PRODUCERS ASSOCIATION, INC.

## GLOBAL PRODUCT SAFETY SUMMARY: 2-ETHYLHEXYL METHACRYLATE

(Last Updated: 9/27/19)

[Disclaimer](#)

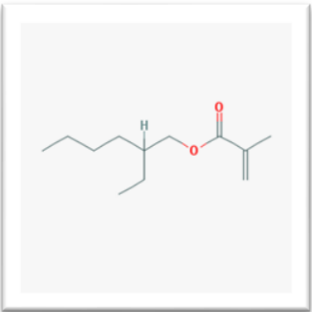
### SUBSTANCE NAME

2-Ethylhexyl Methacrylate

### GENERAL STATEMENT

2-Ethylhexyl Methacrylate (EHMA) is produced for use as building block to make a wide range of polymer-based products that we see and use every day from paints and coatings, toners and inks, oil additives to dental and medical products to name but a few. EHMA in its current uses is of low concern to human health and the environment. It is classified as hazardous (skin irritant, sensitizing, and toxic to aquatic life with long lasting harmful effects). EHMA has been handled safely by industry and professionals for over 60 years. EHMA-based polymers are inert in the environment and can be recycled.

### CHEMICAL IDENTITY

<b>Name:</b>	2-Ethylhexyl Methacrylate
<b>Synonym:</b>	Methacrylic acid, 2-ethylhexyl ester
<b>CAS name:</b>	2-Propenoic acid, 2-methyl-, 2-ethylhexyl ester
<b>CAS number(s):</b>	688-84-6
<b>IUPAC name:</b>	2-Ethylhexyl 2-methyl-2-propenoate
<b>Molecular formula:</b>	C <sub>12</sub> H <sub>22</sub> O <sub>2</sub>
	

### USES AND APPLICATIONS

EHMA is produced for use by industry as monomer for production of polymers. The substance is manufactured in industrial settings in closed systems and used by industry for manufacture of polymers in closed and semi-closed systems. Downstream use of EHMA is almost exclusively in the form of polymer.

## PHYSICAL/CHEMICAL PROPERTIES

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

Property	Value
Physical state	Liquid
Color	Colorless
Odor	Pungent
Density	0.88 g/cm <sup>3</sup> at 20 °C
Melting point	<-50 °C at 1013 hPa
Boiling point	227.6 °C at 1013 hPa
Flammability	Not flammable
Explosive properties	Not explosive
Self-ignition temperature	250 °C
Vapor Pressure	0.065 hPa at 20 °C
Molecular Weight	198.3
Water solubility	3.1 mg/L at 20 °C
Flash point	97 °C at 1013 hPa
Octanol-water partition coefficient (Log Kow)	4.95 at 20 °C

## HUMAN HEALTH SAFETY ASSESSMENT

*Information for the general population and consumers handling products made with 2-ethylhexyl methacrylate.*

### Consumer

The majority of EHMA is converted to polymers before being used in consumer products. Therefore, exposure to EHMA in these products is unlikely.

### Worker

Workers may come into contact with EHMA during polymer production and professional use of products containing liquid monomer. Direct skin contact with liquid EHMA monomer could produce skin irritation, and repeated contact could lead to skin sensitization (allergy or dermatitis). Inhalation of high levels of vapors may irritate the respiratory system.

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

Effect Assessment	Result
Acute Toxicity	Low toxicity after acute oral, dermal and inhalation exposure.
Irritation	Causes irritation to the skin. Not irritating to the eyes or respiratory system.
Sensitization	Sensitizing by skin contact. <a href="#">Click here</a> for a technical summary. By weight of evidence, does not cause <a href="#">asthma</a> .
Mutagenicity	Not mutagenic. <a href="#">Click here</a> for a technical summary. No evidence of carcinogenicity. <a href="#">Click here</a> for a technical summary.
Toxicity after repeated exposure	Toxicity is low and non-specific.
Toxicity for reproduction	Does not harm reproduction or cause birth defects at levels that are not toxic to the mothers. <a href="#">Click here</a> for a technical summary.

## ENVIRONMENTAL SAFETY ASSESSMENT

Based on available data, EHMA is of moderate toxicity to aquatic organisms. EHMA is fully and rapidly biodegradable. While EHMA is not intentionally released during manufacturing processes and use, any EHMA released to air or trace amounts present in waste water streams would rapidly disappear by chemical and biological degradation. EHMA does not possess significant ozone depletion potential.

*The following tables include information for testing performed with the concentrated (liquid) monomer substance. Additional information may be obtained from the SDS supplied by the manufacturer.*

Effect Assessment	Result
Aquatic Toxicity	Toxic to aquatic life with long lasting harmful effects.

Fate and behaviour	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Low
PBT / vPvB conclusion*	Does not meet criteria for PBT or vPvB classification.
Environmental impact	Unlikely to persist in, or have significant impact on, the environment. <a href="#">Click here</a> for a technical summary.

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

## EXPOSURE

### Consumer

Consumer exposure to EHMA is generally limited to products containing polymers made with EHMA. These polymers contain extremely low levels of residual monomer. Exposure of consumers to liquid monomer is therefore unlikely.

### Worker

EHMA is produced in essentially closed systems; therefore, significant worker exposure during manufacture is unlikely. Workers may come into contact with EHMA during polymer production and professional use of products containing liquid monomer.

## RISK MANAGEMENT RECOMMENDATIONS

### Consumer

No Consumer uses of liquid EHMA monomer have been identified. For consumer use of products containing EHMA-based polymers, risk management measures relating to the very low EHMA residues in those polymers are not indicated. In case of any unforeseen consumer uses of EHMA, [any applications](#) involving direct skin and/or nail contact with the liquid monomer that is not under the direct supervision of a medical or dental professional are not recommended (for further reference, see [MPA's policy](#) regarding the use of methacrylates in artificial nails).

### Worker

As for any substance, workers should follow the recommended safety measures as provided by the manufacturer in the Safety Data Sheet. Considering the skin irritating and sensitizing properties of EHMA, this typically will include avoiding skin contact or the wearing of suitable protective gloves and avoiding inhalation of high concentrations of vapor by use of one or more of the following: engineering controls, good general ventilation or personal protective (respiratory) equipment, depending upon the particular use conditions.

## REGULATORY INFORMATION / CLASSIFICATION AND LABELLING

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

This substance has been registered under the 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 (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 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 labelling for the substance. It is not intended to be comprehensive or to replace information found in the SDS.*

**Classification:**

- Eye irritation: Category 2
- Skin corrosion/irritation: Category 2
- Skin Sensitization: Category 1B
- STOT single exposure: Category 3 (respiratory system)
- Aquatic Acute: Category 2
- Aquatic Chronic: Category 3

**Labelling**

Signal word: Warning

Hazard pictogram:

GHS07: exclamation mark



Hazard statements:

H316: Causes mild skin irritation

H317: May cause an allergic skin reaction

H401: Toxic to aquatic life.

H412: Harmful to aquatic life with long lasting effects.

**ADDITIONAL INFORMATION**

**Information on registered substance (ECHA)**

<https://echa.europa.eu/registration-dossier/-/registered-dossier/13871/1>

**OECD High Production Volume (HPV) SIDS**

[https://hpvchemicals.oecd.org/ui/SIDS\\_Details.aspx?id=60633b61-f4f0-4131-a064-eb5d393714c8](https://hpvchemicals.oecd.org/ui/SIDS_Details.aspx?id=60633b61-f4f0-4131-a064-eb5d393714c8)

## CONTACT

For further information on this substance or product safety summaries in general, please contact [MPA](#). Click on the logos below to go to the company's website.



## 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

**Concentrated** - Non-formulated undiluted substance

**ECHA** – European Chemicals Agency

**EU** - European Union

**GHS** - Global Harmonized System

**Hazard** - situation bearing a threat to health and environment

**HPV** - High Production Volume

**IUPAC** – International Union of Pure & Applied Chemistry

**Log Kow** - Log Octanol-Water Partitioning Coefficient

**Mutagenicity** - effects that change genes

**PBT/ vPvB** - Persistent, Bioaccumulative and Toxic/very Persistent and very Bioaccumulative

**OECD**-Organisation for Economic co-operation and Development

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

**SDS** - Safety Data Sheet

**Sensitizing** - causes allergies

**SIDS** - Screening Inventory Data set

**STOT** – Specific Target Organ Toxicity

## 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 [MPA 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.**