

Product Stewardship Summary

2-Ethylhexyl acrylate

General Statement

2-Ethylhexyl acrylate is a colorless liquid. It is a building block in the production of polymer coatings, sealants, and adhesives that improves the water and sun resistance of end use products.

2-Ethylhexyl acrylate is a moderate hazard material and the risk of adverse health effects associated with both occupational and consumer use of this chemical is anticipated to be moderate. Exposure controls in the workplace serve to prevent adverse health effects to workers. Consumers are unlikely to come into contact with harmful levels of 2-ethylhexyl acrylate, as 2-ethylhexyl acrylate monomer is found only in trace quantities in consumer products.

Chemical Identity

Name: 2-Ethylhexyl acrylate

Brand Names: Not Applicable

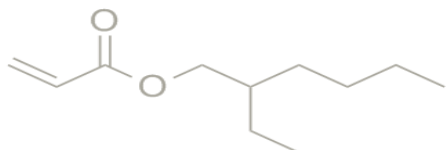
Chemical name (IUPAC): 2-ethylhexyl prop-2-enoate

CAS number(s): 103-11-7

EC number: 203-080-7

Molecular formula: C₁₁H₂₀O₂

Structure:



Uses and Applications

2-Ethylhexyl acrylate is used in the production of homopolymers, co-polymers, and pressure sensitive adhesives. 2-Ethylhexyl acrylate is also used in paint additives and plasticizers.



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Physical/Chemical Properties

Phys/Chem Safety Assessment

Property	Value
Form	Substance
Physical state	Liquid
Color	Colorless
Odor	Pleasant / sweet
Density	0.88 g/cm ³ @ 20°C
Melting / boiling point	-90 / 215 °C
Flammability	Not flammable
Explosive properties	Not explosive
Self-ignition temperature	245 °C at 1013 hPa
Vapor pressure	0.24 hPa @ 25°C
Mol weight	184.28 g/mol
Water solubility	9.6 mg/L @ 25°C
Flash point	86°C
Octanol-water partition coefficient (Log _{k_{ow}})	4.64 @25°C

Exposure, Hazard and Safety Assessment

The following section describes possible exposures scenarios and hazards associated with 2-ethylhexyl acrylate. The exposure assessment describes both the amount of and the frequency with which a chemical substance reaches a person, a population of people, or the environment. Hazard refers to the inherent properties of a substance that make it capable of causing harm to human health or the environment. The safety assessment reports the possibility of a harmful event arising from exposure to a chemical or physical agent under specific conditions. Just because a substance may possess potentially harmful properties does not mean that it automatically poses a risk. It is not possible to make that determination without understanding the exposure.

Human Health Effects

Human Exposure Assessment

Consumer: 2-Ethylhexyl acrylate is used in the production of polymer coatings and finishes, adhesives, sealants, and plastics. It is not anticipated to be present as an ingredient in consumer products. Consumer exposure is most likely limited to extremely low levels of residual monomer that may be present within polymers that are used in consumer products.

Worker: In industrial settings, 2-ethylhexyl acrylate is manufactured and handled in closed processes as much as possible, which ensures that worker exposure to 2-ethylhexyl acrylate is minimized. The proper use of personal protective equipment during loading, unloading, sampling or maintenance operations will further minimize potential exposures to 2-ethylhexyl acrylate.

Human Hazard Assessment:

2-Ethylhexyl acrylate has low acute toxicity if ingested. Skin contact can result in severe irritation and may result in skin sensitization. 2-Ethylhexyl acrylate is not anticipated to cause eye irritation. 2-Ethylhexyl acrylate is neither mutagenic or genotoxic and is not associated with reproductive or developmental toxicity. 2-Ethylhexyl acrylate is not anticipated to cause cancers in humans. 2-Ethylhexyl acrylate does not present an aspiration hazard.

Effect Assessment	Result
Acute Toxicity Oral / inhalation / dermal	Low acute toxicity if ingested. No acute toxicity if inhaled or applied on skin.
Irritation / corrosion Skin / eye / respiratory test	Skin contact causes irritation. Not anticipated to cause eye irritation. Inhalation may cause respiratory irritation
Sensitization	May cause an allergic skin reaction upon contact with skin
Toxicity after repeated exposure Oral / inhalation / dermal	Does not cause significant toxicity to internal organs after repeated or prolonged exposure to low doses
Genotoxicity / Mutagenicity	Does not affect genetic system
Carcinogenicity	Not considered as a carcinogen
Reproductive / Developmental Toxicity	Does not cause reproductive effects, and does not damage unborn children
Aspiration hazard	Does not cause aspiration hazard if swallowed and enters airways

Human Health Safety Assessment

Consumer: 2-Ethylhexyl acrylate is not used as a raw material in consumer product formulations. Therefore, no appreciable consumer exposures or associated health risks are anticipated.

Worker: In industrial settings 2-ethylhexyl acrylate is manufactured and handled primarily in closed processes, which limit exposure. Based on good manufacturing processes and industrial hygiene, the occupational health risk associated with 2-ethylhexyl acrylate is low.

Environmental Effects

Environmental Exposures

Environmental exposure to 2-ethylhexyl acrylate is possible via the manufacturing process of this substance or when the substance is used into formulation under industrial settings – for example, while formulating the substance into mixtures for paints or adhesives. In professional settings, its widespread inclusion in articles such as inks also present the possibility for environmental exposure.

Environmental Hazard Assessment

2-Ethylhexyl acrylate is readily biodegradable and has moderate potential for bioaccumulation. If released into water, 2-ethylhexyl acrylate is expected to adsorb moderately to suspended solids and sediment. In air, 2-ethylhexyl acrylate will be rapidly degraded. If released to soil, 2-ethylhexyl acrylate is expected to have moderate mobility. Volatilization from moist soil surfaces is expected to be an important fate process.

Effect Assessment	Result
Aquatic toxicity	Highly toxic to aquatic organisms with long lasting effects

Fate and behavior	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Moderate potential for bioaccumulation (log K _{ow} = 4.64)
PBT / vPvB conclusion	This substance is not considered to be persistent, bioaccumulating and toxic (PBT) or very persistent and very bioaccumulating (vPvB)

Environmental Safety Assessment

2-Ethylhexyl acrylate is toxic to aquatic organisms. Despite a relatively high level of toxicity, the substance is anticipated to present a low overall risk to aquatic environments. This conclusion is based on the fact that 2-ethylhexyl acrylate will be quickly removed from the aquatic environment through degradation, partitioning to sediment, and evaporation. Overall the 2-Ethylhexyl acrylate is not considered to be PBT or vPvB in the environment.

Risk Management Recommendations

Exposure to 2-ethylhexyl acrylate in the workplace can be controlled by sufficient ventilation, proper handling and storage techniques, and the use of appropriate personal protective equipment as recommended in the SDS for this substance. Consumer products are not anticipated to contain significant levels of 2-ethylhexyl acrylate.

Occupational exposure limits are presented below:

- Austria. Limit values regulation - Annex I: Substance list ZAT_MAK (Time Weighted Average): 10 ppm; 82 mg/m³
- Belarus. Sanitary norms, rules and hygienic standards (Maximum Permissible Concentration - shift-average): 1 mg/m³
- Germany. TRGS 900 - Occupational exposure limit values (Time Weighted Average): 5 ppm; 38 mg/m³
- Latvia. Occupational exposure limit values (Limit value measured and calculated for an 8-hour period): 1 mg/m³
- Macedonia. Occupational Exposure Limits (Time Weighted Average): 10 ppm; 82 mg/m³
- Poland. Occupational exposure limits for airborne toxic substances (Maximal Admissible Concentration): 35 mg/m³
- Russia. Hygienic standards GN 2.2.5.1313-03 (Maximum Permissible Concentration - Time Weighted Average): 1 mg/m³
- Slovenia. Chemical agents at work - Appendix 1: Occupational exposure limits (Time Weighted Average): 10 ppm; 82 mg/m³
- Switzerland. Limit values at the work place (Time Weighted Average): 5 ppm; 38 mg/m³

Regulatory Agency Review

2-Ethylhexyl acrylate appears on the following lists:

Australian Inventory of Chemical Substances (AICS)

Austria - Occupational Exposure Limits (OELs)

China - Chemical Inventory of Existing Chemical Substances (IECSC) - CAS Numbers

DOE Protective Action Criteria (PAC)
ECHA - List of Pre-registered Substances
Environment Canada - Chemical Management Plan - Status of Prioritized Substances
Environment Canada - Domestic Substances List (DSL)
Environment Canada - Domestic Substances List (DSL) - Human Health Categorization
Environment Canada - Domestic Substances List (DSL) Categorization of Existing Substances
Environment Canada - Hazardous Products Act (HPA) - Ingredient Disclosure List (IDL)
EPA - 40CFR - Table 1 to Subpart F of Part 63—Synthetic Organic Chemical Manufacturing Industry Chemicals
EPA - Chemical Update System (CUS) - 2002
EPA - Inert Ingredients in Pesticide Products
EPA - Inert Ingredients Permitted for Use In Nonfood Pesticide Products
EPA - Master Testing List
EPA - Master Testing List (1996)
EPA - Office of Pollution Prevention and Toxics (OPPT) High Production Volume (HPV) Program - 1990
EPA - TSCA - 8(a) - Preliminary Assessment Information Rules (PAIR)
EPA - TSCA - Chemical Hazard Information Profiles (CHIPS)
EPA - TSCA - Inventory
EPA - TSCA - Test Submissions - Section 4
ETUC - Priority List for REACH Authorisation
EU - Cosmetic Ingredients and Fragrance Inventory
EU - European Inventory of Existing Commercial Substances (EINECS)
EU - High Production Volume Chemicals - Priority List 1
EU - Table 3.1 of Annex VI to the CLP Regulation
EU - Table 3.2 of Annex VI to the CLP Regulation
FDA - Inventory of Effective Food Contact Substance (FCS) Notifications
FDA - List of Indirect Additives
Germany - Occupational Exposure Limits (OELs)
IARC- Group 3
Massachusetts Department of Public Health - Massachusetts Substance List (MSL)
Mexico - National Inventory of Chemical Substances
National Cancer Institute - SMILES Notations
New Zealand - Inventory of Chemicals (NZIoC)
NFPA - Hazard Ratings
OECD - High Production Volume (HPV) Chemicals - 2004
OECD - High Production Volume (HPV) Chemicals - 2007
Pennsylvania - Hazardous Substance List
Philippine Inventory of Chemicals and Chemical Substances (PICCS)
Poland - Occupational Exposure Limits (OELs)
Rhode Island - Hazardous Substance List
Russia - Occupational Exposure Limits (OELs)
Switzerland - Occupational Exposure Limits (OELs)
Technischen Regeln für Gefahrstoffe (TRGS) - TRGS900
Turkey - First List of Priority Substances

Regulatory Information / Classification and Labeling

Under the Globally Harmonized System for classification and labeling (GHS), substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the (Extended) 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.

GHS Classification:

Flammable liquids - Category 4
Acute toxicity (Oral) - Category 5

Skin corrosion/irritation - Category 2
Skin sensitisation - Sub-category 1B
Specific target organ toxicity - single exposure - Category 3 (Respiratory system)
Acute aquatic toxicity - Category 2
Chronic aquatic toxicity - Category 3

Hazard Statements:

H227: Combustible liquid.
H303: May be harmful if swallowed.
H315: Causes skin irritation.
H317: May cause an allergic skin reaction.
H335: May cause respiratory irritation.
H401: Toxic to aquatic life.
H412: Harmful to aquatic life with long lasting effects.

Signal Word: Warning

Precautionary Statements:

P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P261: Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264: Wash skin thoroughly after handling.
P271: Use only outdoors or in a well-ventilated area.
P272: Contaminated work clothing should not be allowed out of the workplace.
P273: Avoid release to the environment.
P280: Wear protective gloves/ eye protection/ face protection.

Hazard Pictograms:



Conclusion

2-Ethylhexyl acrylate is used as a reactive component to produce polymers and copolymers, which are used in coatings and inks, adhesives, sealants, textiles, plastics and elastomers. Consumer products will not contain appreciable levels of 2-ethylhexyl acrylate and, therefore, exposure and health risks to consumers are considered to be negligible. In the occupational setting, responsible handling of 2-ethylhexyl acrylate will prevent the potential for adverse effects allowing workers to use materials containing 2-ethylhexyl acrylate safely.

Contact Information with Company

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Additional Information

For more information on GHS, visit <http://www.osha.gov/dsg/hazcom/ghsguideoct05.pdf> or http://live.unece.org/trans/danger/publi/ghs/ghs_welcome_e.html.

Ashland product stewardship summaries are located at <http://www.ashland.com/sustainability/product/product-stewardship>

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REACH registration is specific to Importers/Manufacturers that place the chemical on the EU market, and is specific to registered uses. Inclusion on the list of REACH Registered Substances does not automatically imply registration by Ashland.

Inclusion on the New Zealand Inventory of Chemicals applies only to the pure substance listed. The importer of record must determine whether or not their substances are in compliance.