



Section 1. Product and Company Identification

Product Name 4-Hydroxybutyl Acrylate
CAS Number 2478-10-6

Parchem - fine & specialty chemicals

415 Huguenot Street
New Rochelle, NY 10801

 **(914) 654-6800**  **(914) 654-6899**

 **parchem.com**  **info@parchem.com**

EMERGENCY RESPONSE NUMBER
CHEMTEL

Toll Free US & Canada: 1 (800) 255-3924

All other Origins: 1 (813) 248-0585

Collect Calls Accepted

Section 2. Hazards Identification

Classification of the substance or mixture

GHS-US Classification

Acute Tox. 4 (Oral) H302

Skin Irrit. 2 H315

Eye Dam. 1 H318

Skin Sens. 1 H317

STOT SE 3 H335

GHS Label Elements

Pictograms:



Signal word: DANGER

Hazard and precautionary statements

Hazard statements (GHS US)

H302 - Harmful if swallowed

H315 - Causes skin irritation

H317 - May cause an allergic skin reaction

H318 - Causes serious eye damage

H335 - May cause respiratory irritation

Precautionary statements (GHS US)

P261 - Avoid breathing mist, vapors

P264 - Wash hands, face, clothing thoroughly after handling

P270 - Do not eat, drink or smoke when using this product

P271 - Use only outdoors or in a well-ventilated area



P272 - Contaminated work clothing must not be allowed out of the workplace
P280 - Wear protective gloves, protective clothing, face protection, eye protection
P301+P312 - IF SWALLOWED: Call a doctor, a poison center if you feel unwell
P302+P352 - IF ON SKIN: Wash with plenty of soap and water
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a doctor, a poison center
P321 - Specific treatment (see first aid instructions on this label)
P330 - Rinse mouth
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

Other hazards

Other hazards not contributing to the classification: Substance can undergo hazardous polymerization if not properly inhibited, or if exposed to high temperatures.

Unknown acute toxicity (GHS-US): No data available

Section 3. Composition / Information on Ingredients

Common Name 4-Hydroxybutyl Acrylate
Synonym(s) 2-Propenoic Acid, 4-hydroxybutyl ester; Acrylic acid, 4-hydroxybutyl ester; 1,4-Butanediol monoacrylate; Tetramethylene glycol monoacrylate; 4-HBA
Formula C₇H₁₂O₃
CAS Number 2478-10-6

COMPONENT	CAS NUMBER	CONCENTRATION
4-Hydroxybutyl Acrylate	2478-10-6	≥ 97%
1,4-Butanediol	110-63-4	< 0.9%
1,4-Butanediol Diacrylate	1070-70-8	< 0.2%
Acrylic Acid	79-10-7	< 0.2%
Water	7732-18-5	< 0.1%
4-Methoxyphenol (MEHQ)	150-76-5	0.055% (550 ppm)

Section 4. First Aid Measures

Description of first-aid measures

General: If exposed or concerned, get medical attention/advice. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use. Never give anything to an unconscious person.



Inhalation: IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention if breathing is affected. If breathing is difficult, supply oxygen.
Skin contact: IF ON SKIN (or clothing): Remove affected clothing and wash all exposed skin with water for at least 15 minutes. Get medical attention immediately.
Eye contact: IF IN EYES: Immediately flush with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do so. Get medical attention immediately. Continue rinsing.
Ingestion: IF SWALLOWED: rinse mouth thoroughly. Do not induce vomiting without advice from poison control center or medical professional. Get medical attention if you feel unwell.

Most important symptoms and effects, both acute and delayed

Symptoms/injuries: Harmful if swallowed. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. May cause respiratory irritation.

Inhalation: May cause respiratory irritation.

Skin contact: May cause an allergic skin reaction. Causes skin irritation.

Eye contact: Causes serious eye damage.

Ingestion: Harmful if swallowed.

Indication of any immediate medical attention and special treatment needed: No additional information available

Section 5. Firefighting Measures

Extinguishing media

Suitable extinguishing media: Foam. Dry powder. Water spray. Carbon dioxide. For large fires, alcohol resistant foams are preferred. Water is expected to be effective for large fires.

Special hazards arising from the substance or mixture

Fire hazard: Heat can cause exothermic polymerization.

Flash point (Closed Cup): 273°F/134°C

Explosion hazard: May rupture closed container. Runoff may cause fire or explosion hazard.

Reactivity: Heat can cause hazardous exothermic polymerization. Sealed containers can explode in the heat of fire. Vapors may travel to ignition source because they are heavier than air. Run off may create an explosion, fire, and environmental hazard.

Advice for firefighters

Firefighting instructions: Exercise caution when fighting any chemical fire. Do not dispose of fire-fighting water in the environment. Prevent human exposure to fire, fumes, smoke and products of combustion. Vapors are heavier than air and may travel considerable distance to an ignition source and flash back to source of vapors. Use cold water spray to cool fire-exposed containers to minimize risk of rupture. As in any fire, wear a self-contained breathing apparatus pressure demand (MSHA/NIOSH approved or equivalent) and full protective gear. Toxic vapors may evolve. Fight fires from a safe distance or protected areas. Fire hoses with fog nozzles may be used for controlling fires but care must be exercised not to spread flaming. Use of large volumes of water may produce run-off that may pose a hazardous waste disposal problem. This substance is water-soluble and therefore the use of water during firefighting is expected to be relatively effective. Water will dilute



the compound, without the formation of an appreciable surface slick, and is not expected to spread flaming.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Other information: Combustion may release noxious or toxic vapors.

Section 6. Accidental Release Measures

Personal precautions, protective equipment, and emergency procedures

General measures: Evacuate area. Keep upwind. Ventilate area. Spill should be handled by trained clean-up crews properly equipped with respiratory equipment and full chemical protective gear (see Section 8).

For non-emergency personnel

Protective equipment: Wear Protective equipment as described in Section 8.

Emergency procedures: Evacuate unnecessary personnel.

For emergency responders

Protective equipment: Wear suitable protective clothing, gloves and eye or face protection. For further information refer to section 8: "Exposure controls/personal protection".

Environmental precautions: Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters. Avoid release to the environment.

Methods and material for containment and cleaning up

For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. Prevent entry to sewers and public waters.

Methods for cleaning up: Soak up with inert material. Sweep up material and place in an appropriate chemical waste container for disposal. Do not discharge to sewers or waterways. Place in a suitable container for disposal in accordance with the waste regulations (see Section 13). This substance is water-soluble and will not form an appreciable surface slick.

Reference to other sections: See Sections 8 and 13.

Section 7. Handling and Storage

Precautions for safe handling: Do not handle until all safety precautions have been read and understood. Provide good ventilation in process area to prevent formation of vapor. Do not breathe vapors. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Keep away from sources of ignition - No smoking. Eye-wash stations and emergency showers need to exist in areas where the material is handled, especially areas where loading and unloading operations occur. Keep out of reach of children. Ground all containers when transferring the material.



Caution - hazardous polymerization may cause drum to rupture. Evacuate immediate area. Material undergoing hazardous polymerization is generally evidenced by a warm drum, high drum pressure, and/or bulging drum. If hazardous polymerization is evident, control or slow polymerization by spraying drum with cold water. When polymerization has ended (cold drum), carefully remove drum cap or bung (use blanket to cover cap or bung to prevent splashing) to release excess pressure. Workers conducting such operations should wear personal equipment including eye, face, and hand protection. If the material has not fully polymerized (i.e., not 100% solid), add 1% w/w of phenothiazine (PTZ) to stabilize material for transport and disposal. Properly dispose of both the drum and its contents.

This substance contains the inhibitor methyl ether of hydroquinone (MEHQ), at a level of 450 - 550 ppm, which requires oxygen in air in order to be effective. Inhibitor level must be checked monthly in material stored for more than 3 months. Inhibitor must be maintained at original level to prevent unintended polymerization. Permit air space to exist inside storage containers, however, never use pure nitrogen or oxygen blanketing.

Conditions for safe storage, including any incompatibilities

Storage conditions: Keep only in original container. Store in cool, dry, well ventilated, low fire risk area away from sunlight. Keep the container tightly closed. Store only in approved containers, under approved conditions. Avoid pressure build-up in containers. Keep in a storage area not subject to rapid temperature changes. Isolate from toxic materials or substances that may release corrosive, toxic, or flammable fumes on reaction. An automatic water spray device should be immediately available. A spill control and containment plan should be provided. Do not contaminate water, food, or feed by storage or disposal.

Section 8. Exposure Controls / Personal Protection

Control parameters

Water (7732-18-5)

Remark (ACGIH): OELs not established

Remark (OSHA): OELs not established

4-Methoxyphenol (150-76-5)

ACGIH TWA: 5 mg/m³

OSHA PEL (TWA): 5 mg/m³

2-Propenoic acid, 4-hydroxybutyl ester (2478-10-6)

Remark (ACGIH): OELs not established

Remark (OSHA): OELs not established

1,4-Butanediol (110-63-4)

Remark (ACGIH): OELs not established

Remark (OSHA): OELs not established



2-Propenoic acid, 1,4-butanediyl ester (1070-70-8)

Remark (ACGIH): OELs not established

Remark (OSHA): OELs not established

Acrylic acid (79-10-7)

ACGIH TWA (ppm): 2

Remark (ACGIH): URT irr

OSHA PEL (TWA) (mg/m³): 30

OSHA PEL (TWA) (ppm): 10

Exposure controls

Appropriate engineering controls: Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment with flammable materials. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment: Gloves. Wear chemical goggles and face shield in combination. Protective clothing. Insufficient ventilation: wear respiratory protection.

Hand protection: Use gloves chemically resistant to this material when prolonged or repeated contact could occur. Be aware that the chemical may penetrate the gloves. Frequent changes are advisable. Gloves made of butyl rubber or polyethylene/polyethylvinyl alcohol/polyethylene (PE/EVAL/PE) laminate are anticipated to afford adequate hand protection. Gloves made of nitrile, neoprene, or PVC are not expected to provide adequate hand protection.

Eye protection: Wear eye protection, including chemical splash goggles and a face shield when possibility exists for eye contact due to spraying liquid or airborne particles.

Skin and body protection: Wear long sleeves, and chemically impervious PPE/coveralls to minimize bodily exposure.

Respiratory protection: Respirators equipped with organic vapor cartridges are anticipated to provide adequate respiratory protection during short-term exposures to low vapor concentrations of the material. Workers should wear a supplied-air respirator or self-contained breathing apparatus any time exposure is above low levels or during extended exposure periods. Use MSHA/NIOSH-approved respiratory equipment. Respirators should be selected based on the form and concentration of the contaminant in the air and in accordance with OSHA (29 CFR 1910.134). Handle only in the presence of adequate ventilation.

Section 9. Physical and Chemical Properties

Physical state: Liquid

Appearance: Clear.

Molecular mass: 144.17 g/mol

Color: Colorless.

Odor: Ester-like.

Odor Threshold: No data available

pH: No data available

Relative evaporation rate (Butyl Acetate=1): No data available

Melting point: No data available

Freezing point: -112°C
Boiling point (760 mmHg): 230°C
Boiling point (0.1 mmHg): 95°C
Flash point (Closed Cup): 134°C (273°F)
Auto-ignition temperature: 380 °C
Decomposition temperature: No data available
Flammability (solid, gas): No data available

Vapor pressure (20°C): 0.3 mmHg
Vapor pressure (20°C): 1.0 mmHg
Vapor pressure (20°C): 3.5 mmHg

Relative vapor density (20°C): Heavier than air (Air = 1)
Relative density: 1.042 @ 20 °C
Solubility: Soluble in water.
Log Kow: 0.77 (measured)
Viscosity, kinematic: No data available
Viscosity, dynamic: No data available
Explosive properties: No data available
Oxidizing properties: No data available
Explosive limits: No data available

Other information

VOC content: 100%
Refractive Index (Nd): 1.4520 @ 25°C
Color (APHA): 20 - 50
Tg of Homopolymer: -32°C

Flammable limits

LEL: 1.2% (117 °C)
UEL: 8.2% (159 °C)

Section 10. Stability and Reactivity

Reactivity: Heat can cause hazardous exothermic polymerization. Sealed containers can explode in the heat of fire. Vapors may travel to ignition source because they are heavier than air. Run off may create an explosion, fire, and environmental hazard.

Chemical stability: Stable under recommended handling and storage conditions (see section 7).

Possibility of hazardous reactions: Polymerization may occur with heat or catalyst.

Conditions to avoid: Direct light. Ignition sources. Heat, flame. Fire. UV light.

Incompatible materials: Free radical initiators. Oxidizing agents. Reducing agents. Iron. Rust.

Hazardous decomposition products: Polymers.

Section 11. Toxicological Information

Information on toxicological effects

Acute toxicity: Oral: Harmful if swallowed.

4-Hydroxybutyl acrylate (4-HBA)

LD50 oral rat	871 mg/kg
LD50 dermal rabbit	> 2000 mg/kg

Other acute data: Rats exposed to a saturated atmosphere (~395 ppm) of this compound for 8 hours at 20°C resulted in no deaths.

Skin corrosion/irritation: Causes skin irritation.

The Primary Irritation Index (PII) of this material is 3.0 which is moderately irritating.

Serious eye damage/irritation: Causes serious eye damage.

Osaka Organic Chemical Industry found that the PII of this material is 3.0, which is moderately irritating. Other studies using different test material have reported severe skin irritation.

Respiratory or skin sensitization: May cause an allergic skin reaction. Data on similar compounds indicate that this material may produce skin sensitization.

Germ cell mutagenicity: Not classified

This product was found to be negative in the in vitro Ames mutagenicity test. The anticipated pathway for the metabolism of this product in humans may be de-esterification resulting in the metabolite, 1,4-butanediol. The compound 1,4-butanediol has generally produced negative results in in vitro mutagenicity testing.

Carcinogenicity: Not classified

Reproductive toxicity: Not classified. No developmental toxicity data are available on this product. The anticipated pathway for the metabolism of this product in humans may be de-esterification resulting in the metabolite, 1,4-butanediol. In developmental toxicity testing, 1,4-butanediol had a no-observed-adverse-effect-level of 100 mg/kg/day for maternal and developmental toxicity. Dams exposed to 300 or 600 mg/kg/day exhibited sedation, decreased food intake during and after treatment, and decreased body weight gain. A trend toward decreased late fetal death was observed, but the cumulative incidence of post-implantation mortality (resorptions plus late fetal deaths) was not altered by exposure. Developmental toxicity was expressed primarily as decreased fetal body weights at 300 and 600 mg/kg/day with a trend toward increased skeletal defects at 600 mg/kg/day.

Specific target organ toxicity (single exposure): Not classified

Specific target organ toxicity (repeated exposure): Not classified

Aspiration hazard: Not classified

Symptoms/injuries after inhalation: May cause respiratory irritation.

Symptoms/injuries after skin contact: May cause an allergic skin reaction. Causes skin irritation.



Symptoms/injuries after eye contact: Causes serious eye damage.

Symptoms/injuries after ingestion: Harmful if swallowed.

Section 12. Ecological Information

Toxicity

Ecology - general: Toxic to fish and algae and moderately toxic to Daphnia.

4-Hydroxybutyl acrylate (4-HBA)

LC50 fishes 1	10 mg/l 96-hr
LC50 Daphnia 1	23 ml/l 48-hr
ErC50 (algae)	6 mg/l 72-hr

Persistence and degradability

4-Hydroxybutyl acrylate (4-HBA)

Persistence and degradability: Laboratory and modeling data predict that this substance will be readily biodegradable.

Bioaccumulative potential

4-Hydroxybutyl acrylate (4-HBA)

Bioconcentration factor (BCF REACH)	3.16 (modeled)
Log Kow	0.77 (measured)
Bioaccumulative potential	This material is not expected to bioaccumulate.

Mobility in soil

4-Hydroxybutyl acrylate (4-HBA)

Log Koc: 2.25 (modeled)

Other adverse effects: No additional information available

Section 13. Disposal Considerations

Waste Treatment Methods: Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.

Section 14. Transport Information

In accordance with DOT: Not hazardous for transport Additional information

Other information: No supplementary information available.

Transport by sea: No additional information available

Air transport: No additional information available



Section 15. Regulatory Information

US Federal regulations

4-Hydroxybutyl acrylate (4-HBA)

All chemical substances in this product are listed in the EPA (Environment Protection Agency) TSCA (Toxic Substances Control Act) Inventory or are exempt

SARA Section 311/312 Hazard Classes	Immediate (acute) health hazard
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International Regulations: No additional information available.

US State Regulations

California Proposition 65: This product does not contain any substances known to the state of California to cause cancer and/or reproductive harm

4-Methoxyphenol (150-76-5)

- U.S. - Massachusetts - Right to Know List
- U.S. - New Jersey - Right to Know Hazardous Substance List
- U.S. - Pennsylvania - RTK (Right to Know) List

Acrylic acid (79-10-7)

- U.S. - New Jersey - Right to Know Hazardous Substance List
- U.S. - Massachusetts - Right to Know List
- U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

Section 16. Other Information

Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product.

REVISION DATE: 10/21/2015