



Safety Data Sheet

1. PRODUCT IDENTIFICATION

Name	Butyl Acrylate
Synonyms	acrylic acid, butyl ester; acrylic acid, n-butyl ester; 2-propenoic acid, butyl ester
CAS#	141-32-2
Europe EC#	205-480-7
Product Uses	monomer for acrylic resins

2. HAZARDS

Quick Guide: flammable liquid, heavy vapour may travel, distant ignition & flashback are possible, severely irritating (possibly corrosive) to skin & eyes, skin sensitiser; dangerously reactive vapour, *highly reactive in absence of adequate inhibitor*

Canada – WHMIS
Key:

B 3, D 1A, D 2B, (F) (reactive in absence of inhibitor)
B 2 – Flash Point <38°C, **B 3** – Flash Point >38°C & <93°C
D 1 – Immediately Toxic, **D 2** – Chronic Toxicity
C – Oxidising Substance, **E** – Corrosive, **F** – Reactive Substance



U.S.A. – HMIS
Key:

Health – 3, Fire – 2, Reactivity – 1 (3)
0=minimal, **1**=slight, **2**=moderate, **3**=serious, **4**=severe



3. COMPOSITION

	%	TWAEV / TLV mg/m ³	LD ₅₀ (mg/kg) ORAL	LD ₅₀ (mg/kg) SKIN	LC ₅₀ ppm INHALATION
Butyl Acrylate	100%	2 / 10.5	900*	1780	515*

* see Part 11, "Chronic", below

4. FIRST AID

SKIN:	Wash with soap & plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.
EYES:	Wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is irritation.
INHALATION:	Remove from contaminated area promptly. CAUTION: Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.
INGESTION:	Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim's head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Inadvertent inhalation of vomited material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

5. FIRE FIGHTING & FLAMMABILITY

Flash Point	39°C / 103°F (closed cup)
Autoignition Temperature	267°C / 513°F
Flammable Limits	1.3% – 9.9%
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Firefighting Precautions	foam, dry chemical, water fog or spray to cool, product floats on water – water jet spreads flames; firefighters must wear SCBA
Static Charge Accumulation	probably cannot accumulate a static charge on agitation or pumping

Please ensure that this MSDS is given to, and explained to people using this product.

6. ACCIDENTAL RELEASE MEASURES

Summer Fire Risk: above 35°C / 95°F, blanket spill with foam as a precaution against accidental ignition. Take care to avoid sparks – do not operate (turn on OR off) electrical appliances near spill, unless explosion proof.

Leak Precaution dyke to control spillage and prevent environmental contamination
 Handling Spill ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminium shovel, & store in closed containers for recycling or disposal

7. HANDLING & STORAGE

Store in a cool (ideally below 10°C/50°F), environment, in stainless steel (not mild steel) away from sources of ignition, heat & substances listed in Part 10. Non-sparking bronze or aluminium hand tools are recommended. All electrical & mechanical equipment (lighting, switchgear & forklift trucks) used with or around this product should be explosion-proof.

This product may retain a static charge on agitation or transfer from one container to another. Ground or electrically bond the source container, receiving container & transfer pump before transferring contents. Avoid splashing by ensuring that the product nozzle is below the surface in the receiving container.

Butyl acrylate may react with oxygen in the air creating explosive or flammable peroxides on prolonged storage. (**Shelf-life 6 months.**) If stored longer than a month, test product at regular intervals to ensure an adequate concentration of inhibitor is present. Inhibitors include: *hydroquinone, hydroquinone methyl ether, dimethyl tert-butylphenol*. Phenolic inhibitors require oxygen. Recommended oxygen level is 6-8%; enough to ensure inhibitor potency, but low enough to suppress auto-oxidation. Ensure containers are full & tightly sealed. Empty containers may contain a flammable or explosive vapour. Always ensure that containers, whether empty or full, are tightly sealed unless in use.

Butyl acrylate vapour contains no inhibitor so may polymerise. Check vents & spark arrestors regularly for accumulated polymerised material. Clean as necessary to ensure proper venting and prevent the development of pressure in the container.

Avoid breathing product vapour. Use with adequate ventilation. If dealing with a spill, and ventilation is impossible or impractical, wear a suitable respirator with organic vapour cartridge. Never cut, drill, weld or grind on or near this container. Avoid all contact with skin and wash work clothes frequently. An eye bath and safety shower must be available near the workplace.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV	2ppm / 10mg/m ³	Ontario STEV	not listed
ACGIH TLV	2ppm / 10.5mg/m ³		
OSHA PEL	10ppm / 50.2mg/m ³		
Ventilation	mechanical ventilation may be required to control airborne titre to regulated limits; respirators with organic vapour cartridges must be available to people working in the area for escape purposes – <i>keep respirators in airtight containers (“Tupperware” or “Zip-Lock”) to maintain freshness</i>		
Hands	“Silver Shield”, “Responder”, or “Tychem” gloves – <i>consult supplier to confirm suitability of alternatives</i>		
Eyes	chemical safety goggles – <i>always protect the eyes</i>		
Clothing	wear impermeable (above) apron, boots, & long sleeves if there is any danger of splashing,		

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9. PHYSICAL PROPERTIES

Odour & Appearance	clear, colourless liquid with sharp, unpleasant, fruity odour – lacrymator (causes tears)
Odour Threshold	below 0.002-0.003ppm
Vapour Pressure	below 4mmHg / 0.53kPa (20°C / 68°F)
Evaporation Rate (<i>Butyl Acetate = 1</i>)	not known – <i>should be similar to regular mineral spirits</i>
Vapour Density (air = 1)	4.4
Boiling Range	147°C / 297°F
Freezing Point	-65°C / -84°F
Specific Gravity	0.899 (20/20°C)
Water Solubility	2grams/litre (20°C / 68°F)
Also soluble in	alcohols, ethers and ketones
Viscosity	not known
pH	none – (<i>does not liberate hydrogen ions when dissolved</i>)
Conversion Factor	1ppm = 5.23mg/m ³
Molecular Weight	128grams per mole

10. REACTIVITY

Dangerously Reactive With alkalis,	strong oxidising agents; peroxides, copper, iron, azo compounds, strong acids, strong amines can all initiate hazardous polymerisation
Also Reactive With	none known
Stability	stable in the presence of phenolic inhibitors and oxygen (both required)
Decomposes in Presence of	heat, acidity, alkalinity, ultraviolet, copper or iron can all cause polymerisation
Decomposition Products	none apart from Hazardous Combustion Products
Sensitive to Mechanical Impact	no

11. TOXICITY**Effects, Acute Exposure**

Skin Contact	severely irritating, may be corrosive to skin if contact is prolonged
Skin Absorption	slight; no toxic effects likely by this route
Eye Contact	vapour is a lacrymator (causes tears) at low concentration; a severe eye irritant; may be corrosive to eyes if not removed promptly
Inhalation	severely irritating, usually only upper respiratory tract, however lungs may also be involved and life-threatening oedema may form
Ingestion	likely to irritate mouth, throat & stomach – <i>not a route of industrial exposure</i>

Effects, Chronic Exposure

General	prolonged exposure may cause blistering & severe irritation; prolonged exposure to vapour may cause redness and irritation of nose, throat & eyes
Sensitising	skin sensitiser in humans & animals
Carcinogen/Tumorigen	not considered a tumorigen or a carcinogen in humans or animals
Reproductive Effect	no known effect in humans; teratogen & reproductive toxin in animals, but only at doses producing maternal symptoms
Mutagen	no known effect on humans or animals
Synergistic With	not known
LD ₅₀ (oral)	900*, 3730 & 8050mg/kg (rat), 5880mg/kg (mouse)
LD ₅₀ (skin)	1780 & 3000mg/kg (rabbit)
LC ₅₀ (inhalation)	515* & 2730ppm (rat), 1050 & 1290ppm (mouse)

* *These data may not be reliable.*

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12. ECOLOGICAL INFORMATION

Bioaccumulation	cannot bioaccumulate
Biodegradation	biodegrades readily & rapidly in the presence of oxygen; 61% in 2 weeks, 98% in 3 days & others
Abiotic Degradation	reacts with atmospheric hydroxyl radicals; estimated ½-life in air is 1.2 days & 12-13hr (2 studies)
Mobility in soil, water	somewhat water soluble; moves readily in soil & water
Aquatic Toxicity	
LC ₅₀ (Fish, 96hr)	5.2mg/litre (Oncorhynchus mykiss & Salmo gairdneri), 5mg/litre (Carassius auratus, 72hr), 23mg/litre (Leuciscus Idus & Idus idus, 48hr)
EC ₅₀ (Crustacea, 24hr)	42 & 230mg/litre (Daphnia magna), 8.2mg/litre (Daphnia magna, 48hr)
EC ₅₀ (Algae, 96hr)	5.5mg/litre (Selenastrum capricornutum)
EC ₀ (Bacteria)	50mg/litre (Entosiphon sulcatum), 1.3mg/litre (Microcystic aeruginosa), 80mg/litre (Pseudomonas putida) – <i>NOTE: these are LC₀; no effect seen at these doses</i>

13. DISPOSAL

Waste Disposal	do not flush to sewer , recycle if possible, may be incinerated in approved facility; biodegradation in a dedicated facility should also be considered
Containers	Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use. Pails must be vented and thoroughly dried prior to crushing and recycling. IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 months (5yrs). Steel containers must be inspected, pressure tested & recertified every 5 years. <i>Never cut, drill, weld or grind on or near this container, even if empty</i>

14. TRANSPORT CLASSIFICATION

Canada TDG	PIN	UN-2348
AND	Shipping Name	butyl acrylates, stabilised
U.S.A. 49 CFR	Class	3
	Packing Group	III
Marine Pollutant		not a marine pollutant
ERAP Required		NO

**EMERGENCY INFORMATION**

Canada	Call CANUTEC (collect)	(613) 996-6666
U.S.A.	Call CHEMTREC	(800) 424-9300

15. REGULATIONS

Canada DSL	on inventory
U.S.A. TSCA	on inventory
Europe EINECS	on inventory

Europe Classification	Harmful
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Europe Risk Phrases	R: 10, 36/37/38, 43 - Flammable. Irritating to eyes, respiratory system & skin. May cause sensitization by skin contact.
Europe Safety Phrases	S: 9 - Keep container in a well-ventilated place.

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15. REGULATIONS, cont'd

OSHA Standards: Vacated 1989 OSHA PEL TWA 10 ppm (55 mg/cu m) is still enforced in some states.

NIOSH Recommendations: Recommended Exposure Limit: 10 hr Time-Weighted avg: 10 ppm (55 mg/cu m).

Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 2 ppm, sensitization Excursion Limit Recommendation: Excursions in worker exposure levels may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a work day, and under no circumstances should they exceed 5 times the TLV-TWA, provided that the TLV-TWA is not exceeded. A4; Not classifiable as a human carcinogen.

Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. n-Butyl acrylate is produced, as an intermediate or a final product, by process units covered under this subpart.

FDA Requirements: Homopolymers and copolymers of butyl acrylate are an indirect food additive for use only as a component of adhesives.

16. OTHER INFORMATION

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Data from RTECS, HSDB (Haz. Substance Data Base), Cheminfo (CCOHS), IUCLID Datasheets (ESIS – European Chem. Substance Info. System), & others.

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