

# Material Safety Data for: Butyl Acrylate

## 1. PRODUCT IDENTIFICATION

<b>Name</b>	2-propenoic acid, butyl ester
<b>Synonyms</b>	acrylic acid, butyl ester; acrylic acid, n-butyl ester
<b>CAS#</b>	141-32-2
<b>Product Uses</b>	monomer for acrylic resins

## 2. INGREDIENTS

	%	TWAEV / TLV mg/m <sup>3</sup>	LD <sub>50</sub> ORAL	(mg/kg) SKIN	LC <sub>50</sub> ppm INHALATION
Butyl Acrylate	100%	2 / 10.5	900*	1800	515*

\* see Part 3( b), below

## 3. (a) HAZARDS SUMMARY

**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 only 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

**U.S.A. – HMIS**  
Key:

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

## 3. (b) HAZARDS – TOXICITY

### Effects, Acute Exposure

Skin Contact	severely irritating, may be corrosive to skin if not removed promptly
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 <sub>50</sub> (oral)	900*, 3730 & 8050mg/kg (rat), 5880mg/kg (mouse)
LD <sub>50</sub> (skin)	1800 & 3000mg/kg (rabbit)
LC <sub>50</sub> (inhalation)	515* & 2730ppm (rat), 1050 & 1290ppm (mouse)

\* These data are considerably lower (more toxic) than others recorded on the same species, and may not be a reliable indicator of substance toxicity.

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

**(Butyl Acrylate, cont'd)**

**4. FIRST AID**

- SKIN:** Wash with soap and plenty of water. Remove contaminated clothing and do not reuse until thoroughly cleaned or 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. PHYSICAL PROPERTIES**

Odour & Appearance	clear, colourless liquid with sharp, unpleasant, fruity odour – lacrymator (causes tears)
Odour Threshold	0.002-0.003ppm
Vapour Pressure	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	0.900 (20/20°C)
Water Solubility	2 grams per 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 <sup>3</sup>
Molecular Weight	128grams per mole

**6. FLAMMABILITY & FIRE FIGHTING**

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
Fire Fighting Precautions	foam, dry chemical, water fog or spray to cool, product floats on water – water jet spreads flames; fire fighters must wear SCBA
Static Charge Accumulation	probably cannot accumulate a static charge on agitation or pumping

**7. STABILITY / 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

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

## 8. PROTECTIVE EQUIPMENT / EXPOSURE CONTROL

ACGIH TLV	2ppm / 10.5mg/m <sup>3</sup>
OSHA PEL	10ppm / 50.2mg/m <sup>3</sup>
STEL	not listed
Ventilation respirators	mechanical ventilation may be required to control airborne titre; depending on handling procedures; 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

## 9. HANDLING & STORAGE

Store in a cool (ideally, below 10°C / 50°F), dry environment, in stainless steel (not mild steel) away from sources of ignition, heat and substances listed in Part 7 (above). Non-sparking bronze or aluminium hand tools are recommended. All electrical and mechanical equipment (lighting, switchgear and 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 both the source container and the receiving container, and transfer pump before transferring contents. Avoid splashing by ensuring that the product nozzle is below the surface in the receiving container.

This product may react with oxygen in the air to form explosive or flammable peroxides on prolonged storage. (***Shelf-life 6 months.***) If storing for longer than a month, test product at regular intervals to ensure that an adequate concentration of polymerisation inhibitor is present. These include: *hydroquinone, hydroquinone methyl ether, dimethyl tert-butylphenol*. Phenolic inhibitors require the presence of oxygen. Recommended oxygen for storage is 6-8% – enough to ensure inhibitor potency, but low enough to prevent auto-oxidation. Ensure that containers are full and tightly sealed. Empty containers may contain a flammable / explosive vapour. Always ensure that containers, whether empty or full, or part full, are tightly sealed unless in use.

Vapour is free of inhibitor so may polymerise. Check vents and spark arrestors regularly for accumulation of 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.

## 10. SPILL PROCEDURES

***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

## 11. DISPOSAL

Waste Disposal	<b>do not flush to sewer</b> , recycle solvent if possible, may be incinerated in approved facility
Containers	<b>Drums</b> should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use. <b>Pails</b> must be vented and thoroughly dried prior to crushing and recycling. <b>IBCs</b> (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>

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

(Butyl Acrylate, cont'd)

page 4

## 12. ENVIRONMENTAL INFORMATION

Bioaccumulation	this product cannot bioaccumulate
Biodegradation	this product degrades readily and rapidly in the presence of oxygen; 61% biodegrades in 2 weeks
Abiotic Degradation	this product reacts with atmospheric hydroxyl radicals; its estimated half-life in air is 1.2 days
Mobility in soil, water	this product is sufficiently water soluble to move readily in soil and water
<b>Aquatic Toxicity</b>	
LC <sub>50</sub> (Fish, 96hr)	5.2mg/litre (Oncorhynchus mykiss & Salmo gairdneri), 23mg/litre (Leuciscus Idus & Idus idus, 48hr)
EC <sub>50</sub> (Crustacea, 24hr)	230mg/litre (Daphnia magna), 42mg/litre (Daphnia magna Straus)
EC <sub>50</sub> (Algae, 96hr)	5.5mg/litre (Selenastrum capricornutum)

## 13. TRANSPORT REGULATIONS

<b>Canada TDG</b>	<b>PIN</b>	<b>UN-2348</b>
<b>AND</b>	<b>Shipping Name</b>	<b>butyl acrylates, stabilised</b>
<b>U.S.A. 49 CFR</b>	<b>Class</b>	<b>3</b>
	<b>Packing Group</b>	<b>III</b>
<b>Marine Pollutant</b>		<b>not a marine pollutant</b>

## 14. EMERGENCY INFORMATION

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

## 15. REGULATIONS

<b>Canada DSL</b>	<b>on inventory</b>
<b>U.S.A. TSCA</b>	<b>on inventory</b>
<b>Europe EINECS</b>	<b>on inventory (EC# 205-480-7)</b>

**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. PREPARATION INFORMATION

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577

With data from RTECS, Haz. Substance Data Base, Cheminfo (CCOHS), IUCILID Datasheets (European Chem. Substance Info. System), & others, as available

Preparation Date: **December 2003** Revision Date: **December 2006, December 2009**

File Name: **butyl acrylate**

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