

## GPS Safety Summary

**Substance Name:**

**n-Butyl acrylate**

### 1. General Statement

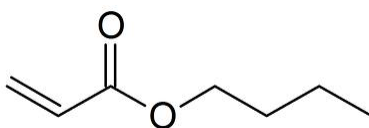
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n-Butyl acrylate is a reactive material that will readily polymerize if not properly controlled by inhibitors. It is mostly used as a co-monomer. The resulting co-polymers are ingredients used in coatings, elastomers, leather finishing, adhesives/sealants, thickeners, surfactants, fibres, plastics, textiles and inks.

### 2. Chemical Identity

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<b>Name:</b>	n-Butyl acrylate
<b>Brand names:</b>	NORSOCRYL <sup>®</sup> BA
<b>Chemical name (IUPAC):</b>	Butyl prop-2-enoate
<b>CAS number:</b>	141-32-2
<b>EC number:</b>	205-480-7
<b>Molecular formula:</b>	C <sub>7</sub> H <sub>12</sub> O <sub>2</sub>
<b>Structure:</b>	



### 3. Use and applications

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The main industrial use of n-Butyl acrylate is as a monomer for polymerisation. The polymers and co-polymers derived from n-Butyl acrylate are used in:

- water-based paints and coatings;
- construction adhesives and pressure-sensitive adhesives;
- coatings for textiles, wood and paper;
- leather finishing, particularly for nubuck and suede;
- the manufacture of various plastics.

n-Butyl acrylate is not sold to consumers.

### 4. Physical / Chemical properties

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n-Butyl acrylate is a flammable, volatile liquid organic substance with the following physicochemical properties:

Property	Value
Physical state	Liquid at 20°C and 1013 hPa
Colour	Colourless
Odour	Strong, fruity
Molecular weight	128.2 g/mol
Density	0.90 g/cm <sup>3</sup> at 20°C
Vapour pressure	5 hPa at 22.2°C
Freezing / boiling points	-64.6°C / 147°C at 1013 hPa
Flash point – flammability	37°C at 1013 hPa – flammable liquid and vapour
Self-ignition temperature	292°C at 1013 hPa
Explosive / oxidizing properties	Not expected based on structure
Water solubility	1.7 g/L at 20°C
Octanol-water partition coefficient (Log K <sub>ow</sub> )	2.38 at 25°C

## 5. Health Effects

n-Butyl acrylate has a strong, fruity odour which does not necessarily indicate a health hazard.

Like any reactive chemical, n-Butyl acrylate can be hazardous if not handled properly.

Effect Assessment	Results
Acute Toxicity Oral / inhalation / dermal	Harmful by inhalation. May be harmful if swallowed and by contact with skin. Ingestion may cause gastrointestinal irritation or ulceration.
Irritation / corrosion Skin / eye/ respiratory tract	Liquid may cause skin and eye irritation. Vapour may cause irritation to upper respiratory tract (nose and throat).
Sensitisation	May cause an allergic skin reaction: low sensitising potential by skin contact.
Toxicity after repeated exposure Oral / inhalation / dermal	After repeated inhalation exposure the predominant effect is local irritation which can result in damage to the olfactory epithelium.
Genotoxicity / Mutagenicity	Based on the available test data, not expected to cause genetic effects.
Carcinogenicity	Did not cause cancer in long-term animal studies.
Reproductive / Developmental Toxicity	Did not cause birth defects in laboratory animals. No adverse effects were seen in the foetus at doses that were not toxic to the mother. Similar materials did not cause reproductive effects in laboratory animals. In addition, no effects were seen on reproductive organs in long-term animal studies.

## 6. Environmental Effects

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In aquatic organisms, n-Butyl acrylate is acutely toxic to fish, invertebrates and algae and harmful to invertebrates and algae (no data in fish) on the long-term.

n-Butyl acrylate is unlikely to persist in the environment since it biodegrades rapidly in sewage treatment plants. It is not expected to bind significantly to soil or sediment due to its low adsorption coefficient ( $\log K_{oc} = 1.95$ ). If released to air, photochemical degradation is expected to occur ( $DT_{50} = 28$  h, OH radical degradation). It is not expected to accumulate in the food chain, *i.e.*, the bioaccumulative potential is low due to the moderate octanol-water partition coefficient ( $\log K_{ow} = 2.4$ ).

Effect Assessment	Result
Aquatic Toxicity	Acute: toxic. Chronic: harmful.

Fate and behaviour	Result
Biodegradation	Readily biodegradable
Bioaccumulation potential	Not expected to bioaccumulate
PBT / vPvB conclusion	Not considered to be PBT* or vPvB**

\*: Persistent, Bioaccumulative and Toxic (PBT)

\*\* : very Persistent and very Bioaccumulative (vPvB)

## 7. Exposure

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### 7.1 Human health

#### **Consumers:**

Consumers are not directly exposed to n-Butyl acrylate because it is transformed into other substances present in consumer products.

Indirect exposure via the environment is negligible due to the biodegradability and low bioaccumulative potential.

#### **Workers:**

n-Butyl acrylate is industrially manufactured and used almost entirely within closed systems, minimizing the occupational exposure potential. Exposure may occur either in manufacturing facilities or in facilities using n-Butyl acrylate. Workers may be exposed during cleaning, maintenance, transfer, sampling and analysis.

Procedures, controls, collective and personal risk management measures are in place, which limit the occupational exposure during the manufacture and use of the substance. Workers who might accidentally come into contact with the undiluted substance should follow the safety measures recommended in the Extended Safety Data Sheet.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the Extended Safety Data Sheet (see Chap. 8 and Exposure Scenarios).

### 7.2 Environment

n-Butyl acrylate is industrially manufactured and used in closed systems in a continuous or batch process, or is consumed by polymerization or use as a process regulator, minimizing release to the environment. Potential releases may occur via wastewater and exhaust gases.

Procedures, controls and risk management measures are in place, which limit the environmental exposure.

The main expected release compartment is the atmosphere due to the volatility. Any released amount is expected to be photodegraded. Distribution to wastewater is expected to be moderate and any release would biodegrade rapidly in waste water treatment plants while the non-degraded remainder would ultimately evaporate to the atmosphere.

Based on the risk assessment, the risk is controlled when activities are carried out under conditions recommended in the Extended Safety Data Sheet (see Chap. 8 and Exposure Scenarios).

## 8. Risk Management recommendations

Human health measures		
<b>Organizational</b>	Collect the latest available Safety Data Sheet. Implement good basic standards of occupational hygiene. Ensure operatives are well informed of the hazards and trained to minimise exposures. Handle and store according to the indications of the Safety Data Sheet.	
<b>Engineering controls</b>	Should be handled in well ventilated areas. Prevention of inflammation and unscheduled polymerization should be in place. Provide appropriate local exhaust ventilation at points of emission. Ensure that eye- and handwash stations and safety showers are close to workstation locations.	
<b>Protection</b>	<b>Eye/Face protection:</b>	Tightly fitting safety goggles
	<b>Skin protection:</b>	Protective suit
	<b>Hand protection:</b>	Neoprene gloves tested to EN374
	<b>Respiratory protection:</b>	Respirator if ventilation is insufficient
Environment protective measures		
Do not release into the environment. Do not let product enter drains. Incinerate any waste. Use waste water treatment systems. Do not spread sludge to soil.		

## 9. Regulatory Information / Classification and Labelling



### 9.1 Regulatory Information

This substance has notably been registered and assessed under:

- EU Regulation EC 1907/2006 (REACH)
- OECD SIDS (Screening Information Data Set) program

### 9.2 Classification and labelling

Under GHS, substances are classified according to their physical, health, and environmental hazards. The hazards are communicated via specific labels and the eSDS. 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. Substances registered for REACH are classified according to CLP (EC) 1272/2008, implementation of the GHS in the European Union.

Classification	
<ul style="list-style-type: none"> <li>– Flammable liquids: Category 3.</li> <li>– Acute toxicity - Inhalation: Category 4.</li> <li>– Skin irritation: Category 2.</li> <li>– Eye irritation: Category 2.</li> <li>– Specific target organ toxicity - single exposure (inhalation): Category 3.</li> <li>– Skin sensitization: Category 1.</li> <li>– Chronic aquatic toxicity: Category 3.</li> </ul>	
Signal word	
Warning	
Pictograms	
– GHS02: Flame	
– GHS07: Exclamation mark	
Hazard statements	
<ul style="list-style-type: none"> <li>– H226: Flammable liquid and vapour.</li> <li>– H332: Harmful if inhaled.</li> <li>– H315: Causes skin irritation.</li> <li>– H319: Causes serious eye irritation.</li> <li>– H335: May cause respiratory irritation.</li> <li>– H317: May cause an allergic skin reaction.</li> <li>– H412: Harmful to aquatic life with long lasting effects.</li> </ul>	
Additional classification according to Globally Harmonized System (GHS)	
<ul style="list-style-type: none"> <li>– Acute toxicity - Dermal: Category 5; May be harmful in contact with skin.</li> <li>– Acute toxicity - Oral: Category 5; May be harmful if swallowed.</li> <li>– Acute aquatic toxicity: Category 2; Toxic to aquatic life.</li> </ul>	

## 10. Contact Information within Company

For further information on this substance or product safety summary in general, please contact:

- **ICCA portal where the GPS Safety Summary is posted:**  
<http://www.icca-chem.org/en/Home/ICCA-initiatives/global-product-strategy/>
- Arkema-acrylics-reach-uses@arkema.com

## 11. Date of Issues / Revision

- Date of issue: 2012-08-30
- Date of revision:

## 12. Disclaimer

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The information contained in this paper is intended as advice only and whilst the information is provided in utmost good faith and has been based on the best information currently available, is to be relied upon at the user's own risk.

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