

## ACRYLAT OJSC

### SAFETY DATA SHEET

According to 1907/2006/EC (REACH), 1272/2008 (CLP) & 453/2010

## BUTYL ACRYLATE

VERSION: 1.0  
DATE CREATED: 21/09/2011  
Regulation: EC No 1272/2008

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

#### 1.1 Product identifier

NAME OF SUBSTANCE: Butyl acrylate  
SYNONYMS: 2-Propenoic acid, butyl ester; Butyl prop-2-enoate;  
n-Butyl acrylate  
TRADE NAMES: Butyl acrylate  
Index No (CLP): 607-062-00-3  
CAS #: 141-32-2  
EC #: 205-480-7  
REGISTRATION #: 01-2119453155-43-0025

#### 1.2 Relevant identified uses of the substance

Most common technical function of substance:  
- Intermediates

For the detailed identified uses of the product see Annex 1.  
The use of the substance should be limited to those specified in Annex 1.

#### 1.3 Details of the safety data sheet supplier

##### SUPPLIER:

Company name: Acrylat OJSC  
Address: Vostochnaya Promzona, Dzerzhinsk, Nizhni Novgorod region,  
606008, Russian Federation  
Fax: +7 8313 24 59 02; +7 8313 24 59 03 (8.00 to 17.00, GMT+3)  
Email Address: dzerzhinsk@acrylat.ru; pto@acrylat.ru  
Emergency phone: +7 8313 24-59-99 (round the clock)

**Emergency phone in the country of delivery:** 112 (*Please note that emergency numbers may vary depending upon the country of delivery though 112 remains valid as universal number*)

**ONLY REPRESENTATIVE:**

Company name: Gazprom Marketing and Trading France  
Address: 68 avenue des Champs-Élysées, Paris, 75008, France  
Contact phone: +33 1 42 99 73 50  
Fax: +33 1 42 99 73 99  
Email address: yury.severinchik@gazprom-mt.com

**SECTION 2. HAZARDS IDENTIFICATION**

**2.1 CLASSIFICATION**

Butyl acrylate

**Classification and labelling according to DSD / DPD**  
**Classification and labelling in Annex I of Directive 67/548/EEC**

Physical/Chemical Hazards:

R10 Flammable.

Health Hazards:

Xi; R36/37/38 Irritant. Irritating to eyes, respiratory system and skin.  
R43 May cause sensitisation by skin contact.

Environmental hazards:

None.

**Classification and labelling according to EC/1272/2008 Annex VI + self classification:**

Physical/Chemical Hazards:

Flam. Liquid 3 (Hazard statement: H226: Flammable liquid and vapour).

Health Hazards:

Acute Tox. 4 (Hazard statement: H332: Harmful if inhaled).  
Skin Irrit. 2 (Hazard statement: H315: Causes skin irritation).  
Eye Irrit. 2A (Hazard statement: H319: Causes serious eye irritation).  
Skin Sens. 1 (Hazard statement: H317: May cause an allergic skin reaction).

Specific target organ toxicity - single: STOT Single Exp. 3 (Hazard statement: H335: May cause respiratory irritation). Route of exposure: Inhalation.

Environmental hazards:

None.

## 2.2 LABELLING

### EU LABELLING:

**Indication of danger: Irritant**



**Symbol: Xi;**

### CLP LABELLING:

**Signal word: Warning**

**Hazard pictogram:**



**GHS02: flame**



**GHS07: exclamation mark**

### Other hazards:

Assessment PBT / vPvB:

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): Not fulfilling PBT (persistent/bioaccumulative/toxic) criteria.

According to Annex XIII of Regulation (EC) No.1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH): Not fulfilling vPvB (very persistent/very bioaccumulative) criteria.

**The full text for all S, P-Phrases is given in Section 16.**

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Name EC No	EC No	CAS No	Content (w/w) %	Classification Regulation (EC) No 67/548 and (EC) No 1272/2008 (CLP)
Butyl acrylate <i>Index No(CLP):</i> <i>607-062-00-3</i>	205-480-7	141-32-2	99.5 – 99.85	F:R10; Xi:R36/37/38; R43 H226; H319; H335; H315; H317;

**The product does not contain impurities or additives that could affect product labelling and classification according to Regulation (EC) No 67/548/EEC and Regulation (EC) No 1272/2008 (CLP) in the concentration ranges specified (none Classification):**

Name EC No	EC No	CAS No	Content (w/w) %	Classification Regulation (EC) No 67/548 and (EC) No 1272/2008 (CLP)
<b>Impurities</b>				
acrylic acid <i>Index No(CLP):</i> 607-061-00-8	201-177-9	79-10-7	≤0.005	none
butyl propionate <i>Index No(CLP):</i> 607-029-00-3	209-669-5	590-01-2	≤0.05	none
butan-1-ol <i>Index No(CLP):</i> 603-004-00-6	200-751-6	71-36-3	≤0.1	none
n-butyl acetate <i>Index No(CLP):</i> 607-025-00-1	204-658-1	123-86-4	≤0.1	none
1.4-butanediyl diacrylate <i>Index No(CLP):</i> 607-119-00-2	213-979-6	1070-70-8	≤0.015	none
Benzaldehyde <i>Index No(CLP):</i> 605-012-00-5	202-860-4	100-52-7	≤0.015	none
isobutyl acrylate <i>Index No(CLP):</i> 607-115-00-0	203-417-8	106-63-8	≤0.13	none
di-n-butyl ether <i>Index No(CLP):</i> 603-054-00-9	205-575-3	142-96-1	≤0.08	none
<b>Additives</b> (this stabilizer inhibit the polymerization of butyl acrylate):				
Mequinol <i>Index No(CLP):</i> 604-044-00-7)	205-769-8	150-76-5	10-20 ppm	none

Specific Conc. Limits (CLP): none.  
M-factor: none.

#### SECTION 4. FIRST-AID MEASURES

##### General Advice:

Immediately remove contaminated clothing. If danger of loss of consciousness, place patient in recovery position and transport accordingly. Apply artificial respiration if necessary. First aid personnel should pay attention to their own safety.

**If inhaled:**

Keep patient calm, remove to fresh air, seek medical attention.

**Skin contact:**

Flush with copious amounts of water for at least 15 minutes. Immediate medical attention required.

**Contact with eyes:**

Immediately wash affected eyes for at least 15 minutes under running water with eyelids held open, consult an eye specialist.

**Ingestion:**

Immediately rinse mouth and then drink plenty of water, do not induce vomiting, seek medical attention.

**Most important symptoms and effects, both acute and delayed:**

Hazards: No data available.

**Note to physician:**

Treatment: Treat according to symptoms (decontamination, vital functions), no known specific antidote, administer corticosteroid dose aerosol to prevent pulmonary edema.

**SECTION 5. FIRE-FIGHTING MEASURES**

**Extinguishing media:**

Suitable extinguishing media:  
carbon dioxide, dry powder, water spray, foam

**Special hazards:**

Risk of spontaneous and violent self-polymerization if inhibitor is lost or product is exposed to excessive heat. Polymerization is accompanied with heat emissions, during which the temperature and gas pressure grow rapidly. In case of uncontrolled polymerization there might occur rapid release of energy with risk of explosion in closed, non ventilated containers.

Methylacrylate vapors and air produce explosive mixture. Open fire, smoking, local overheating may cause fire or explosion.

**Special protective equipment:**

Wear a self-contained breathing apparatus

**Advice for fire-fighters:**

Special protective equipment:  
Wear a self-contained breathing apparatus.

**Further information:**

In case of a fire in the vicinity a restabilization system should be used if the temperature in the storage container reaches 45°C. Evacuate area of all unnecessary personnel. In case of a fire in the vicinity evacuate all personnel in a greater area if the temperature in the storage container reaches 60°C.

**Fire safety measures:**

Provide possibility to quickly pump out the product in case of emergency from vessels used for



storage and processing.

Inspect work areas regularly, especially storage vessels, loading and discharge lines checking for combustion gas.

Immediately clean product spillages. Provide efficient means of fire fighting for cleaning the accidental spillages.

Do not use tools which are not intrinsically safe for maintenance and repairing at areas, where combustible gases accumulation is possible.

Do not add dry inhibitor to the product by loading it via steam discharge pipes due to the risk of static ignition.

## SECTION 6. ACCIDENTAL RELEASE MEASURES

### **Personal precautions:**

Take appropriate protective measures. Ensure adequate ventilation. Use personal protective clothing. Breathing protection required.

### **Methods and material for containment and cleaning up:**

For large amounts: Pump off product. Dispose of absorbed material in accordance with regulations.

For residues: Pick up with suitable absorbent material. Dispose of absorbed material in accordance with regulations.

Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations.

### **Environmental precautions:**

Prevent the product from entering drains/surface waters/groundwater.

### **Reference to other sections:**

Information regarding exposure controls/personal protection and disposal considerations can be found in section 8 and 13.

### **Additional information:**

Release of product can cause fire or explosion. Blanket with firefighting foam.

## SECTION 7. HANDLING AND STORAGE

### **Handling:**

Handle in accordance with good industrial hygiene and safety practice. The product may be handled only by appropriately trained personnel. Facility parts must be checked for polymer residues and cleaned on regular basis in order to avoid hazardous reactions.

Ensure thorough ventilation of storage and work areas. Encapsulation or exhaust ventilation required.

When filling, transferring, or emptying containers, adequate local exhaust ventilation is necessary. Vent waste air to atmosphere only through suitable separators. Check the condition of seals and connector screw threads. Do not open warm or swollen product containers. Remove persons to safety and alert fire brigade.

Protect against heat. Protect from direct sunlight. Protect contents from the effects of light.

Ensure adequate inhibitor and dissolved oxygen level.

### **Protection against fire and explosion:**

Product can form explosive mixture with air. Ground all transfer equipment properly to prevent electrostatic discharge. Containers should be grounded against electrostatic charge. It is

recommended that all conductive parts of the machinery are grounded. Avoid all sources of ignition: heat, sparks, open flame. Vapours may form explosive mixture with air. Ignitable mixtures can be formed in the emptied container.

Heated containers should be cooled to prevent polymerization. If exposed to fire, keep containers cool by spraying with water. Emergency cooling must be provided for the eventuality of a fire in the vicinity.

Sealed containers should be protected against heat as these results in pressure build-up. Avoid influence of heat.

**Storage:**

Suitable materials for containers: aluminum, stainless still, corrosion-proof steel, polyethylene.

Do not store or transfer the product by pressure under inert gases.

Containers should be properly sealed.

Do not store with less than 10 % headspace above liquid.

This product contains an inhibitor for stabilization during transportation and storage.

Recommended inhibitor level is: 10 to 20 ppm.

Ensure adequate inhibitor and dissolved oxygen level.

Inhibitor efficiency depends on dissolved oxygen content.

The product should be stored with gas containing 5- 9% of oxygen (vol.).

Avoiding polymerization: see STABILITY AND REACTIVITY section.

**Storage stability:**

The product is stabilized, the shelf life should be noted. Avoid prolonged storage.

Storage temperature: <30 °C.

The product should be used within 1 year to avoid stability loss or polymerization.

This product should be processed as soon as possible.

Storage stability is based upon ambient temperatures and conditions described.

Storage temperature: 45 °C:

A restabilization system should be used if the temperature in the storage container reaches the indicated value.

**All personnel should be evacuated if the temperature in the storage container reaches 60 °C.**

**Further information on storage conditions:**

Vessels should be well protected from penetration of other materials/substances. Provide designated lines for product loading and discharge.

Pipelines desing should avoid product stagnation.

Regularly control the combustible gas concentration in work areas.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**8.1 Control parameters**

**8.1.1 Occupational Exposure Limits**

International Limit Values<sup>1)</sup>

SUBSTANCE Butyl acrylate CAS #141-32-2	LTEL 8 hr TWA ppm	LTEL 8 hr TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Note
Austria	2	11	10	53	
Belgium	2	11	10	53	
Denmark	2	11	4	22	
European Union	2	11	10	53	Occupational Exposure Limit Values
France	2	11	10	53	Indicative statutory limit values
Germany (AGS)	2	11	4 (1)	22 (1)	(1) 15 minutes average value
Germany (DFG)	2	11	4	22	STV 15 minutes average value
Hungary		11		53	
Italy	2	11	10	53	
Poland		11		30	
Spain	2	11	10	53	
Sweden	10	50	15	80	
Switzerland	2	11	4	22	
The Netherlands		11		53	
USA - NIOSH	10	55			
USA - OSHA					
United Kingdom	1	5	5	26	

<sup>1)</sup> GESTIS International Limit values:  
[http://bgia-online.hvbg.de/LIMITVALUE/WebForm\\_ueliste.aspx](http://bgia-online.hvbg.de/LIMITVALUE/WebForm_ueliste.aspx)

**8.1.2 DNEL/ PNEC values**

**DN(M)ELs for workers**

Exposure pattern	Route	Descriptor	DNEL /DMEL	Most sensitive endpoint	Justification
Acute - systemic effects	Dermal		no DNEL		Dose-level selection for long-term studies was limited by severity of local irritation effects on the upper respiratory tract. The most critical effects of n-butyl acrylate (nBA) are its strong irritation property and its skin sensitizing properties. According
Acute - systemic effects	Inhalation		no DNEL		



Exposure pattern	Route	Descriptor	DNEL /DMEL	Most sensitive endpoint	Justification
					to current EU legislation (Directive 67/548/EEC and EC No 1272/2008) nBA is classified as irritating (R36/37/38, Skin irritation/corrosion Cat 2, Eye irritation 2A, STOT SE 3) and may cause skin sensitization (R43, Skin sensitization Cat 1). An induction-specific DNEL was derived for skin sensitization.
Acute – local effects	Dermal	DNEL	0.28mg/cm <sup>2</sup>  <b>Corrected Dose descriptor</b> <b>2.80 mg/cm<sup>2</sup></b> (based on AF of 10)	Sensitis. (skin)	Induction-specific DNEL (for details see Discussion)
Acute – local effects	Inhalation		no DNEL		Short-term DNELs were not derived, since the long-term DNEL is sufficient to ensure that no acute inhalation toxicity and respiratory irritation effects occur.
Long-term - systemic effects	Dermal		no DNEL		Long-term exposure systemic DNELs were not calculated due to the lack of long-term systemic effects.
Long-term-systemic effects	Inhalation		no DNEL		
Long-term - local effects	Dermal		no DNEL		According to current EU legislation (Directive 67/548/EEC and EC No 1272/2008) nBA is classified as irritating (R36/37/38, Skin irritation/corrosion Cat 2, Eye irritation 2A, STOT SE 3) and may cause skin sensitization (R43, Skin sensitization Cat 1). An induction-specific DNEL was derived for skin sensitization.
Long-term - local effects	Inhalation	DNEL	11 mg/m <sup>3</sup>	irritation (respiratory tract)	DNEL based on SCOEL (for details see Discussion)

#### DN(M)ELs for the general population

Exposure pattern	Route	Descriptor	DNEL / DMEL	Most sensitive endpoint	Justification/ Remarks
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Exposure pattern	Route	Descriptor	DNEL / DMEL	Most sensitive endpoint	Justification/ Remarks
Acute - systemic effects	Dermal		no DNEL		Dose-level selection for long-term studies was limited by severity of local irritation effects on the upper respiratory tract. The most critical effects of n-butyl acrylate (nBA) are its strong irritation property and its skin sensitizing properties. According to current EU legislation (Directive 67/548/EEC and EC No 1272/2008) nBA is classified as irritating (R36/37/38, Skin irritation/corrosion Cat 2, Eye irritation 2A, STOT SE 3) and may cause skin sensitization (R43, Skin sensitization Cat 1). An induction-specific DNEL was derived for skin sensitization.
Acute - systemic effects	Inhalation		no DNEL		
Acute - systemic effects	Oral		no DNEL		Since no exposure by the oral route is expected, no DNEL was derived.
Acute - local effects	Dermal	DNEL	<b>0.28 mg/cm<sup>2</sup></b> <b>Corrected Dose descriptor</b> <b>2.80 mg/cm<sup>2</sup></b> (based on AF of 10)	Sensitis. (skin)	Induction-specific DNEL (for details see Discussion)
Acute - local effects	Inhalation		no DNEL		Short-term DNELs were not derived, since the long-term DNEL is sufficient to ensure that no acute inhalation toxicity and respiratory irritation effects occur.
Long-term - systemic effects	Dermal		no DNEL		Long-term exposure systemic DNELs were not calculated due to the lack of long-term systemic effects.
Long-term - systemic effects	Inhalation		no DNEL		
Long-term - systemic effects	Oral		no DNEL		Since no exposure by the oral route is expected, no DNEL was derived.
Long-term - local effects	Dermal		no DNEL		Dose-level selection for long-term studies was limited by severity of local irritation effects on the upper respiratory tract. The most critical effects of n-butyl acrylate (nBA) are its strong irritation property and its skin sensitizing properties. According to current EU legislation (Directive 67/548/EEC and

Exposure pattern	Route	Descriptor	DNEL / DMEL	Most sensitive endpoint	Justification/ Remarks
					EC No 1272/2008) nBA is classified as irritating (R36/37/38, Skin irritation/corrosion Cat 2, Eye irritation 2A, STOT SE 3) and may cause skin sensitization (R43, Skin sensitization Cat 1). An induction-specific DNEL was derived for skin sensitization.
Long-term - local effects	Inhalation	DNEL	<b>1.27 mg/m<sup>3</sup></b>	irritation (respiratory tract)	DNEL based on SCOEL (for details see Discussion)

### PNEC water

PNEC	Assessment factor	Remarks
PNEC aqua (freshwater): <b>0.00272 mg/L</b>	50	Extrapolation method: assessment factor. An assessment factor of 50 was applied to the lowest NOEC value available (0.136 mg/L).
PNEC aqua (marine water): <b>0.00027 mg/L</b>	500	Extrapolation method: assessment factor. An assessment factor of 500 was applied to the lowest NOEC value available, derived from a 21-day chronic life-cycle study with <i>Daphnia magna</i> (0.136 mg/L).
PNEC aqua (intermittent releases): <b>0.011 mg/L</b>	100	Extrapolation method: assessment factor. The recommended assessment factor for the derivation of a PNEC aqua (intermittent releases) is 100 (for the most sensitive species is <i>Cyprinodon variegatus</i> with an LC50 of 1.1 mg/L).

### PNEC sediment

PNEC	Assessment factor	Remarks
PNEC sediment (freshwater): <b>0.0338 mg/kg sediment dw</b>		Extrapolation method: partition coefficient  Since no experimental data were available for sediment dwelling organisms, the PNEC sed was estimated using the equilibrium partitioning method as recommended by the Technical Guidance Document for Risk Assessment (ECB, 2003) and Guidance on information requirements and chemical safety assessment, Chapter R.10 (ECHA, May 2008). PNEC sediment in mg/kg sediment ww = 0.00736

### PNEC soil

PNEC	Assessment factor	Remarks/Justification
PNEC soil:	1000	Extrapolation method: assessment factor

<b>1 mg/kg soil dw</b>		<p>Data on effects to terrestrial organisms are not available for n-butyl acrylate.</p> <p>For the derivation of the PNEC<sub>soil</sub> an OECD TG 217 study with an EC50 greater than 1000 mg/kg soil dw based on soil micro-flora (carbon-cycle) is available for methyl acrylate. An assessment factor of 1000 is proposed by the Guidance on information requirements and chemical safety assessment, Chapter R.10 (ECHA, May 2008) for such data. The resulting PNEC soil is 1 mg/kg soil dw.</p>
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### PNEC sewage treatment plant

Value	Assessment factor	Remarks/Justification
PNEC STP: <b>3.5 mg/L</b>	1	<p>Extrapolation method: assessment factor</p> <p>The most sensitive microorganism to n-butyl acrylate was the protozoan <i>Chilomonas paramecium</i> with a 48-hour TT of 3.5 mg/L. Although this species does not influence the degradation processes itself, it is necessary for a proper function of a WWTP. For this kind of test result an assessment factor of 1 is proposed for the determination of PNEC STP by the Guidance on information requirements and chemical safety assessment (ECHA, May 2008).</p>

### PNEC oral (secondary poisoning)

PNEC	Assessment factor	Remarks/Justification
PNEC oral: <b>0.02 g/kg food</b>	90	<p>Based on a log Kow value of 2.38, no bioaccumulation of n-Butyl acrylate in organisms is expected. Hence, secondary poisoning will not be an important factor in the hazard assessment. Nevertheless, a PNEC oral was determined.</p> <p>Since no data on acute or chronic toxicity towards birds are available, the PNEC oral for secondary poisoning was derived from a subchronic drinking water study with rats (Dow, 1980). The NOAEL (male) was 84 mg/kg bw corresponding to a NOEC (food) = 1.68E-3 kg/kgfood. The assessment factor for a 90-day study in mammals is 90 resulting in a PNEC oral (mammal) = 1.87E-05 kg/kg food.</p>

## 8.2 Exposure Controls

### Personal protective equipment

#### Eye protection:

Wear approved safety goggles. Safety glasses with side-shields (frame goggles, e.g. EN 166).

#### Respiratory protection:

Suitable respiratory protection for lower concentrations or short-term effect: Gas filter for gases/vapours of organic compounds (boiling point >65 °C, e. g. EN 14387 Type A).

**Hand protection:**

Suitable materials also with prolonged, direct contact (Recommended: Protective index 6 corresponding > 480 minutes of permeation time according to EN 374):  
 fluoroelastomer (FKM) - 0.7mm coating thickness  
 nitrile rubber (NBR) - 0.4mm coating thickness

**Body protection:**

Body protection must be chosen depending on activity and possible exposure, e.g. apron, protecting boots, chemical-protection suit (according to EN 14605 in case of splashes or EN ISO 13982 in case of dust).

**General safety and hygiene measures:**

Avoid contact with skin. Avoid inhalation of vapour.

For more information please see the relevant exposure scenario in Appendix II of this SDS

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Property	Value	Remarks
Physical state at 20°C and 1013 hPa	liquid	
Colour	Colourless	
Odour	Pungent, acrid odor	
pH value	not applicable, of very low solubility	
Melting / freezing point	-64.6 °C (209 K at 1013 hPa)	Measured (Lide, D.R. (ed.). CRC Handbook of Chemistry and Physics. 76th ed.)
Boiling point	147 °C at 1013.25 hPa (420 K at 1013 hPa)	dynamic method, extrapolated (BASF AG Dampfdruck von Methylacrylat, Ethylacrylat und Butylacrylat, 1983)
Relative density	0.9 at 20°C	Measured (BASF AG, Stoffwerte Butylacrylat, 1963)
Vapour pressure	5 hPa at 22.2 °C (500 Pa at 293.15 K)	Measured (BASF AG Dampfdruck von Methylacrylat, Ethylacrylat und Butylacrylat, 1986)
Water solubility	1.7 g/l at 20 °C	OECD Guideline 105 (Water Solubility)
Partition coefficient n-octanol/water (log value)	Log Kow (Pow): 2.38 at 20°C	OECD Guideline 107 (Partition Coefficient (n-octanol / water))
Viscosity	at 20°C: 0.88 mPa s (dynamic)	Measured, capillary method (BASF AG, Stoffwerte Butylacrylat, 1986)
Flash point	38 °C at 1013.25 hPa	closed cup DIN 51755:

Property	Value	Remarks
Flammability	Flammable upon ignition. The substance has no pyrophoric properties and does not liberate flammable gases on contact with water.	Flammability derived from flash point. Based on chemical structure pyrophoric properties and flammability in contact with water are not to be expected. In accordance with section 1 of REACH Annex XI, the flammability is deduced from flash point and boiling point.
Lower explosion limit Upper explosion limit:	1.25 %(V) 63 g/m <sup>3</sup> 8 %(V) 425 g/m <sup>3</sup> (air)	Literature data. ESTIS - Substance database of 'Berufsgenossenschaftlichen Instituts für Arbeitsschutz' (BGIA), online query 29 Jan 2008
Explosive properties	non explosive	There are no chemical groups associated with explosive properties present in the molecule. In accordance with column 2 of REACH Annex VII, the explosiveness of the substance does not need to be tested, because there are no chemical groups associated with explosive properties in the molecule
Self-ignition temperature	565 K at 1013 hPa	
Oxidising properties	no oxidising properties	The Substance is incapable of reacting exothermically with combustible materials. In accordance with column 2 of REACH Annex VII, the oxidising properties do not need to be tested, because the substance is incapable of reacting exothermically with combustible materials on the basis of the chemical structure.
Granulometry	not applicable	Substance is marketed or used in a non solid or granular form.
Stability in organic solvents and identity of relevant degradation products	not applicable	In accordance with column 1 of REACH Annex IX, the test does not need to be conducted because the stability of the substance is not considered as critical
Dissociation constant	not applicable	The substance does not contain any ionic structure. In accordance with section 1 of REACH Annex XI, the dissociation constant study does not need to be performed because the substance does not contain any ionic structure.

Property	Value	Remarks
Granulometry	not applicable	Substance is marketed or used in a non solid or granular form. In accordance with column 2 of REACH Annex VII, the particle size distribution (Granulometrie) study does not need to be performed as the substance is marketed or used in a non solid or granular form.
Surface tension	not applicable	In accordance with column 2 of REACH Annex VII, the surface tension of the substance does not need to be tested because due to its chemical structure, no surface activity is predicted.

## SECTION 10. STABILITY AND REACTIVITY

### Chemical stability:

Stable under recommended storage and handling conditions.

### Reactivity:

The product undergoes the following reactions: polymerization, hydrolyzation, oxidation, hydration, interesterification, halogenation, interacts with amines, amides, phenols and alcohols.

### Possibility of hazardous reactions:

Risk of spontaneous and violent self-polymerization if inhibitor is lost or product is exposed to excessive heat.

Risk of spontaneous polymerization when heated or in the presence of UV radiation.

With unstabilised product, spontaneous polymerisation may occur e.g. through ambient heat.

Radical formation can cause exothermic polymerization.

Risk of spontaneous polymerization in the presence of starters for radical chain reactions (e.g. peroxides).

Risk of spontaneous polymerization in the presence of oxidizing agents. Polymerizes explosively in contact with strong oxidizing agents.

Reacts with peroxides and other radical components. Reacts with nitric acid.

Under uncontrolled polymerization there might occur rapid release of energy with risk of explosion in closed, non ventilated containers.

### Conditions to avoid:

Avoid heat. Avoid oxygen content above the product of less than 5 %. Avoid UV-light and other radiation with high energy. Avoid direct sunlight. Avoid prolonged storage. Avoid inhibitor loss. Avoid excessive temperatures.

Avoid storing the ether near highly oxidized substances, hyperoxides, substances, which can self ignite or polymerize when in contact with each other or when mixed with ether.

### Incompatible materials:

Substances/materials to avoid: strong bases, acids, concentrated mineral acids, acid anhydrides, acid chlorides, oxidizing agents, reducing agents, radical formers, free radical initiators, peroxides, mercaptans, nitro-compounds, perborates, azides, ether, ketones, aldehydes, amines, nitrates, nitrites, metal salts, inert gas.

**Hazardous decomposition products:**

No hazardous decomposition products if stored and handled as prescribed/indicated.

**SECTION 11. TOXICOLOGICAL INFORMATION**

Property	Results	Remarks
<b>Acute toxicity:</b>		
Oral	LD50: 3150 mg/kg bw (rat)	key study, experimental result OECD Guideline 401 (Acute Oral Toxicity), BASF AG (1958)
Inhalation	LC50: 10.3 mg/L(rat)	key study, experimental result OECD Guideline 403 (Acute Inhalation Toxicity), BASF AG (1980)
Dermal	LD50 (dermal): 2000 - 3024 mg/kg bw (rabbit, occlusive)	key study, experimental result OECD SIDS (2002c), Union Carbide Corporation (UCC) (1971; 1950)
<b>Irritation/Corrosivity:</b>		
Butyl acrylate is irritating to skin, eyes, and respiratory system. The substance is not corrosive. EU classification according to Annex I of Directive 67/548/EEC: Xi, R36/37/38 GHS classification (GHS UN rev.3, 2009): - Skin corrosion/irritation: Category 2 - Serious eye damage/eye irritation: Category 2A - Specific target organ toxicity, Single exposure: Category 3 (May cause respiratory irritation)		
Eye irritant	rabbit (1 and 24 h): irritating	key study, experimental result Based on experimental result BASF test (BASF AG 1958)
Skin irritant	rabbit (1, 5, 15 min, and 20 h) occlusive: irritating	key study, experimental result Based on experimental result BASF test (BASF AG 1978)
Respiratory tract	Mouse, inhalation, vapour: irritating effects on the respiratory system RD50 (30 min): 1.78 mg/L air (analytical) (male)	key study, experimental result ASTM E961-84 method, Standard Test Method for Estimating Sensory Irritancy of Airborne Chemicals (American Society for Testing and Materials, published May, 1984). The RD50, the concentration producing 50 % depression of respiratory rate
<b>Sensitisation:</b>		
	EU classification according to Annex I of Directive 67/548/EEC: Xi, R43 GHS classification: Skin Sensitization Category 1B	
Skin sensitization	Mouse: sensitizing  EC3 = 11.2 % w/v (2.8 mg/cm <sup>2</sup> )	key study, experimental result OECD TG 429 and GLP regulations (BAMM 2006, Testing lab.: Syngenta Central Toxicology Laboratory)



Respiratory system	not sensitizing	There is no information available on the potential for n-butyl acrylate to produce respiratory sensitisation in animals
Repeated dose toxicity	EU classification according to Annex VI of Directive 67/548/EEC: no classification required GHS classification: Specific Target Organ Toxicity/ Repeated Exposure: no classification required	
Oral	NOAEL = 84 mg/kg bw/d (rat, male) NOAEL = 111 mg/kg bw/d (rat, female) LOAEL: 150 mg/kg bw/day (nominal) (rat, male/female)	key study, experimental result OECD TG 408 (Repeated Dose 90-Day Oral Toxicity in Rodents) Dow Chemical Co. (1980)
Inhalation	NOAEC (systemic) = 108 ppm (570 mg/m <sup>3</sup> /day); rat (male/female) NOAEC (local) = 21 ppm (110 mg/m <sup>3</sup> /day), rat (male/female) LOAEC(systemic)= 1.11 mg/L air rat (male/female) LOAEC (local) =0.57 mg/L air rat (male/female)	key study, experimental result OECD TG 413 (Subchronic Inhalation Toxicity: 90-Day) BASF AG (1979a) BASF AG (1980b)
Dermal	Not applicable	In accordance with column 2 of REACH Annex IX, no sub-acute or sub-chronic study with dermal application of n-Butyl acrylate has to be conducted since a valid chronic (cancerogenicity) study in mice is available. No further testing is required.
<b>Mutagenicity:</b>	<b>Negative</b> EU classification according to Annex VI of Directive 67/548/EEC: no classification required GHS classification (GHS UN rev.3, 2009): no classification required	
In vitro data	negative (bacterial reverse mutation assay e.g. Ames test, gene mutation; S. typhimurium TA)	key study, experimental result The study was conducted according to the method described by Ames BN et al. (1975). Mut. Res. 31: 347-364 BASF AG (1977)
In vivo data	rat, genotoxicity: negative	key study, experimental result OECD TG 475 (Mammalian Bone Marrow Chromosome Aberration Test) BASF AG (1978b)
<b>Carcinogenicity:</b>	<b>No carcinogenic effects</b> EU classification according to Annex VI of Directive 67/548/EEC: no classification required GHS classification (GHS UN rev.3, 2009): no classification required	



Inhalation	Neoplastic effects: no effects NOAEC (carcinogenicity) = 0.773 mg/L air (135 ppm) (rat, male/female) LOAEC (toxicity) = 0.086 mg/L air (rat, male/female)	key study, experimental result OECD TG 453 (Combined Chronic Toxicity / Carcinogenicity Studies) INBIFO (1985) Reininghaus W, Koestner A, and Klimisch H-J (1991)
Dermal	Neoplastic effects: no effects NOAEL (carcinogenicity): = 8 mg/kg bw/day (mouse, male)	key study, experimental result Bushy Run Research Center (1982) DePass LR et al. (1984)
<b>Toxicity for reproduction:</b>	No effect on reproductive organs EU classification according to Annex VI of Directive 67/548/EEC: no classification required GHS classification (GHS UN rev.3, 2009): no classification required	
Effects on fertility	NOEC (reproductive toxicity):= ca. 0.269 mg/L air = 75 ppm (rat; male/female)	key study, experimental result Read-across to methyl acrylat (CAS 96-33-3) OECD TG 416 EPA OPPTS 870.3800 (Reproduction and Fertility Effects) JMAFF, Guideline 2-1-17, Reproduction Study (2000) The Dow Chemical Company (2009)
Developmental toxicity	<p>1. <u>Oral</u>: negative Mouse: NOAEL (maternal toxicity):= 100 mg/kg bw/day NOAEL (developmental tox.) = 1000 mg/kg bw NOAEL (teratogenicity) = 2000 mg/kg bw</p> <p>2. <u>Inhalation</u>: negative <u>Rat</u>: NOAEC (maternal, developmental tox.) = 25 ppm (130 mg/m<sup>3</sup>) NOAEC (teratogenicity) = 250 ppm (1310 mg/m<sup>3</sup>) LOAEC (maternal tox.) = 100 ppm (520 mg/m<sup>3</sup>) NOAEC (fetotox.) = 100 ppm (520 mg/m<sup>3</sup>) NOAEC (teratogenicity) = 300 ppm (1570 mg/m<sup>3</sup>)</p> <p><u>Rabbit</u> NOAEC (maternal tox.) = 15 ppm (55.3 mg/m<sup>3</sup>) NOAEC (fetotox., teratogenicity) =</p>	<p><u>Oral</u>: key study, experimental result Rohm &amp; Haas Co. (1979); National Toxicological Program (1987) OECD SIDS (2002c)</p> <p><u>Inhalation</u>: key study, experimental result Guidelines for reproduction studies for safety evaluation of drugs for human use, FDA, Jan. 1966 and Guidance on reproduction studies from the Association of the British Pharmaceutical Industry, 1975. BASF AG (1979b) Saillenfait AM et al. (1999)</p> <p>Read-across to methyl acrylat (CAS 96-33-3) OECD TG 414</p>



	45 ppm (155.6 mg/m <sup>3</sup> )	EPA OPPTS 870.3700 (Prenatal Developmental Toxicity Study) BASF SE (2009b)
<b>Toxicokinetics (absorption, metabolism, distribution and elimination)</b>	After oral and i. v. administration, n-butyl acrylate was rapidly absorbed and metabolized in male rats. The major portion of n-butyl acrylate was hydrolysed by carboxyesterase to acrylic acid and n-butanol. The subsequent metabolism follows that for acrylic acid, and involves metabolism to carbon dioxide via the propionate degradation pathway (acrylic acid --> 3-hydroxypropionic acid --> malonyl semialdehyde --> acetyl S CoA --> tricarboxylic acid cycle -->CO <sub>2</sub> ). Metabolism of n-butanol proceeds via the alcohol and aldehyd dehydrogenase pathway. A smaller portion of the administered n-butyl acrylate was conjugated with endogenous GSH to be subsequently excreted as mercapturic acids in the urine.	
<b>Other effects:</b>	none	

**SECTION 12. ECOLOGICAL INFORMATION**

Property	Value	Remarks
<b>AQUATIC TOXICITY</b>		
<b>Fish:</b>		
Short-term toxicity	LC50 (96 h): 5.2 mg/L test mat. <i>Salmo gairdneri (new name: Oncorhynchus mykiss)/ freshwater</i>	key study, experimental result EPA OTS 797.1400 (Fish Acute Toxicity Test) Analytical Bio-Chemistry Laboratories, Inc. (1990a)
	LC50 (96 h): 2.1 mg/L test mat. <i>Cyprinodon variegatus/ saltwater</i>	OECD Guideline 203 (Fish, Acute Toxicity Test) WildLife International Ltd. (1996)
Long-term toxicity to fish: Not applicable In accordance with section 3 of REACH Annex XI, the study does not need to be conducted. The use of n-butyl acrylate as a monomer, almost exclusively in closed systems for the production of polymers, indicates that environmental exposure would be limited. The volatility of n-butyl acrylate provides for volatilization of any releases to the air. n-Butyl acrylate is slowly photodegradable and readily biodegradable, and accidental releases to the environment would not result in accumulation or persistence. The relatively high water solubility and corresponding low log Kow indicate that no bioaccumulation potential exists.		
<b>Aquatic invertebrates:</b>		
Short-term toxicity ( <i>Daphnia Magna</i> )	EC50 (48 h): 8.2 mg/L test mat. based on mobility	key study, experimental result EPA OTS 797.1300 (Aquatic Invertebrate Acute Toxicity Test, Freshwater Daphnids)  Analytical Bio-Chemistry Laboratories, Inc. (1990c)
Long-term toxicity ( <i>Daphnia Magna</i> )	NOEC (21 d): 0.136 mg/L test mat. meas. (TWA) based on: reproduction	key study, experimental result OECD Guideline 211 (Daphnia magna Reproduction Test)

	NOEC (21 d): 0.19 mg/L test mat. meas. (arithm. mean) based on: reproduction	BASF SE (2009c) EPA OTS 797.1330 (Daphnid Chronic Toxicity Test) ABC Laboratories, Inc. (1997)
Algae and aquatic plants ( <i>Selenastrum capricornutum</i> , new name: <i>Pseudokirchnerella subcapitata</i> ) (algae)	EC50 (96 h): 2.65 mg/L test mat. meas. (arithm. mean) based on: cell number	key study, experimental result OECD Guideline 201 (Alga, Growth Inhibition Test)  Analytical Bio-Chemistry Laboratories, Inc. (1990e)
Toxicity to aquatic micro-organisms	EC0 (3 d): > 150 mg/L test mat. (nominal) (domestic activated sludge, BOD Test)	key study, experimental result  ASTM STP 528  WildLife International Ltd. (1995)

**Sediment organisms:** Not applicable

In Annex IX of Regulation (EC) No 1907/2006, it is laid down that long-term toxicity testing shall be proposed by the registrant if the chemical safety assessment indicates the need to investigate further the effects on sediment organisms.

According to Annex I of this regulation, the chemical safety assessment triggers further action when the substance or the preparation meets the criteria for classification as dangerous according to Directive 67/548/EEC or Directive 1999/45/EC or is assessed to be a PBT or vPvB.

The hazard assessment of nBA reveals neither a need to classify the substance as dangerous for the environment, nor is it a PBT or vPvB substance. Furthermore, due to the physico-chemical properties of the substance and its ready biodegradability, a considerable exposure of the sediment compartment is unlikely.

Therefore, a long-term toxicity study in sediment organisms is not provided. The PNEC sediment can be estimated based on the equilibrium partitioning method.

**Toxicity to soil macro-organisms:** Not applicable

In accordance with section 3 of REACH Annex XI, the study does not need to be conducted. Since n-butyl acrylate is readily biodegradable and no direct releases to soil from point sources are known, no significant exposure of the terrestrial compartment is expected.

<b>Toxicity to soil micro-organisms:</b>	EC50 (28 d): > 1000 mg/kg soil dw test mat. (nominal) based on: respiration rate	key study, experimental result Read-across to methyl acrylat (CAS 96-33-3) OECD Guideline 217 (Soil Microorganisms: Carbon Transformation Test) BASF SE (2010)
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**Toxicity to terrestrial plants:** Not applicable

In accordance with section 3 of REACH Annex XI, the study does not need to be conducted. Since n-butyl acrylate is readily biodegradable and no direct releases to soil from point sources are known, no significant exposure of the terrestrial compartment is expected

**Toxicity to birds:** Not applicable.

In accordance with section 1 and 3 of REACH Annex XI, the study does not need to be conducted. Since no exposure of birds is expected, testing of birds is not required.

**Secondary poisoning**

Due to the logPow, significant accumulation in organisms is not expected. Therefore, secondary poisoning is of no concern for this substance. Furthermore, the substance holds no toxicological classification which is relevant for secondary poisoning Hence, the substance is considered not to cause toxic effects if accumulated. Therefore, secondary poisoning is of no concern for this substance. PNEC<sub>coral</sub> (secondary poisoning) = 0.02 g/kg food (based on a log Kow value of 2.38).

No bioaccumulation of n-Butyl acrylate in organisms is expected. Hence, secondary poisoning will not be an important factor in the hazard assessment.

#### DEGRADATION

**Abiotic degradation:** n-Butyl Acrylate will be slowly degraded by photochemical processes after exposure to the air reacting with the photochemically produced hydroxyl radicals and with ozone.

Hydrolysis	Half-life (DT50): t1/2 (pH 3): 2800 d at 25 °C t1/2 (pH 7): 1100 d at 25 °C t1/2 (pH 11): 243 min at 25 °C Transformation products: not measured	key study, experimental result Environmental Protection Agency Guidelines, 40 CFR Ricerca, Inc. (1990)
Phototransformation in air	Half-life (DT50): 27.96 h (24-hr day)	key study, calculated (Q)SAR (Computer programme: SRC AOP v1.92) BASF SE (2008a)

**Biodegradation:** n-Butyl acrylate is readily biodegradable

Biodegradation in water	readily biodegradable % Degradation of test substance: 61 after 14 d (O <sub>2</sub> consumption)  57.8 after 28 d (O <sub>2</sub> consumption)	experimental result OECD Guideline 301 C (Modified MITI Test (I)) Chemical Inspection & Testing Institute Japan (1992)  OECD Guideline 301 D (Closed Bottle Test) Roy F. Weston, Inc. (1996)
Biodegradation in soil	study scientifically unjustified	In accordance with column 2 of REACH Annex IX, no simulation tests in soil are required, since n- butyl acrylate is readily biodegradable according to OECD criteria

#### ENVIRONMENTAL DISTRIBUTION

Adsorption/desorption	Adsorption of n-Butyl acrylate to the solid soil phase is not expected. Adsorption coefficient: K <sub>oc</sub> = 40.3 log K <sub>oc</sub> = 1.6  Adsorption coefficient: K <sub>oc</sub> : 40 — 148 log K <sub>oc</sub> : 1.6 — 2.2	Study type: adsorption (soil)  Calculated, QSAR PCKOCWIN v1.66 BASF SE, 2008b  EPA OTS 796.2750 (Sediment and Soil Adsorption Isotherm) Ricerca, Inc. (1991)
Volatilization	Henry's Law constant H: 21.89 Pa m <sup>3</sup> /mol at 25 °C	key study, estimated by calculation, (Q)SAR SRC HENRYWIN v3.10  BASF SE (2008c)
Environmental distribution	Percent distribution in media: Air (%): 94.55	key study, estimated by calculation



	Water (%): 5.24 Soil (%): 0.1 Sediment (%): 0.1 Susp. sediment (%): 0 Biota (%): 0 Aerosol (%): 0	Calculation according to Mackay, Level I  BASF SE (2008d)
<b>BIOACCUMULATION:</b> n-Butyl acrylate does not accumulate in organisms.		
Aquatic bioaccumulation	BCF: 17.27 The BCF was calculated based on the log Kow = 2.38. log BCF: 1.237	key study, estimated by calculation SRC BCFBAF v3.00  BASF SE (2009a)
	The PNEC <sub>oral</sub> is 0.02 g/kg food	
<b><u>PBT/vPvB</u> Properties</b>	Regarding all available data on biotic and abiotic degradation, bioaccumulation and toxicity it can be stated that the substance does not fulfill the PBT criteria (not PBT) and not the vPvB criteria (not vPvB).	
<b>WATER HAZARD CLASSIFICATION</b>	According to the German VwVwS: WGK- 1 (low danger for water pollution).	

**SECTION 13. DISPOSAL CONSIDERATIONS**

**General information:**

Do not allow spilled product and waste water to enter the sewage and open surface water. Avoid groundwater pollution.

**Waste treatment methods:**

Must be sent to a suitable incineration plant (thermal neutralization), observing local regulations.

**Contaminated packaging:**

Uncleaned empties should be disposed of in the same manner as the contents.

For more information please see the relevant exposure scenario in Appendix II of this SDS.

**SECTION 14. TRANSPORT INFORMATION**

**Land transport:**

ADR

ID number: UN 2348  
Hazard class: 3  
Packing group: III  
Hazard label: 3  
Proper shipping name: BUTYL ACRYLATES, STABILIZED

RID

ID number: UN 2348



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Hazard class: 3  
Packing group: III  
Hazard label: 3  
Proper shipping name: BUTYL ACRYLATES, STABILIZED

**Inland waterway transport:**

ADN

ID number: UN 2348  
Hazard class: 3  
Packing group: III  
Hazard label: 3, N3  
Proper shipping name: BUTYL ACRYLATES, STABILIZED

**Sea transport:**

IMDG

ID number: UN 2348  
Hazard class: 3  
Packing group: III  
Hazard label: 3  
Marine pollutant: NO  
Proper shipping name: BUTYL ACRYLATES, STABILIZED

**Air transport:**

IATA/ICAO

ID number: UN 2348  
Hazard class: 3  
Packing group: III  
Hazard label: 3  
Proper shipping name: BUTYL ACRYLATES, STABILIZED

**SECTION 15. REGULATORY INFORMATION**

**REGULATORY**

**Chemical Safety Report has been performed for butyl acrylate.**

APPENDIX II to the e-SDS: Exposure scenarios.

**KEY LITERATURE REFERENCES AND SOURCES**

**DOCUMENTS, PROVIDED BY ACRYLATE REACH TASK FORCE CONSORTIUM:**  
CHEMICAL SAFETY REPORT to Butyl acrylate (CAS 141-32-2).

**EU DIRECTIVES**

REGULATION (EC) No 1907/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

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Regulation (EC) No 1272/2008 REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

Regulations. Commission regulation (EU) no 453/2010 of 20 May 2010 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)

DIRECTIVE 1999/45/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations Directive 67/548/EEC on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labeling of dangerous substances.  
COMMISSION DECISION of 16 January 2001 amending Decision 2000/532/EC as regards the list of wastes (notified under document number (2001/118/EC)

#### UK REGULATORY REFERENCES

Chemicals (Hazard Information & Packaging) Regulations. The Control of Substances Hazardous to Health Regulations 1988. Health and Safety at Work Act 1974.

#### ENVIRONMENTAL LISTING

Control of Pollution Act 1974.

#### STATUTORY INSTRUMENTS

Notification of New Substances Regulations (NONS) 1993. The Export and Import of Dangerous Chemicals Regulations 2005 number 928.

#### APPROVED CODE OF PRACTICE

Classification and Labelling of Substances and Preparations Dangerous for Supply (EU 2001/59/EC). Safety Data Sheets for Substances and Preparations (REACH)

#### GUIDANCE NOTES

Workplace Exposure Limits EH40. Introduction to Local Exhaust Ventilation HS(G)37. CHIP for everyone HSG(108).

#### NATIONAL REGULATIONS

The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002. No. 1689.

Workplace Exposure Limits 2005 (EH40).

The Carriage of Dangerous Goods and use of transportable pressure equipment regulations 2004.

Control of Substances hazardous to health regulations 2002 (as amended).

#### NATIONAL REGULATIONS (GERMANY)

Major Accident Hazard Legislation 82/501/EWG.

### **SECTION 16. OTHER INFORMATION**

#### **16.1. Indication of changes**

VERSION	Date of change	Section	Description of changes
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Version: 1.0	21/09/2011		Version was created at first
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## 16.2 Abbreviations and acronyms

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
AGS	The German Committee on Hazardous Substances (Ausschuss für Gefahrstoffe – AGS)
BCF	Bioconcentration factor
DFG	Germany Research Foundation
DNEL	Derived No Effect Level
IMDG	International Maritime Dangerous Goods
ICAO-TI	Technical Instructions for the Safe Transport of Dangerous Goods by Air
K <sub>oc</sub>	Adsorption coefficient
K <sub>ow</sub>	octanol-water partition coefficient
LC50	Lethal Concentration to 50 % of a test population
LD50	Lethal Dose to 50% of a test population (Median Lethal Dose)
LOAEC	Lowest Observable Adverse Effect Concentration
LTEL	Long Term Exposure Limit
NIOSH	National Institute for Occupational Safety and Health ( <i>USA CDC</i> )
NOEC	No Observed Effect Concentration
NOAEL	No Observed Adverse Effect Level
OECD	Organization for Economic Co-operation and Development
OSHA	Occupational Safety & Health Administration ( <i>USA</i> )
PNEC	Predicted No Effect Concentration
PBT	Persistent, bioaccumulative, toxic chemical
vPvB	Very Persistent, Very Bioaccumulative
RID	Regulations concerning the International Carriage of Dangerous Goods by Rail
STEL	Short Term Exposure Limit
STOT	Specific Target Organ Toxicity
(STOT) RE	Repeated Exposure
(STOT) SE	Single Exposure
TWA	Time Weighted Average
UN	United Nations
WGK	Wassergefährdungsklasse ( <i>German: Water Hazard Class</i> )

## 16.3 Relevant R-phrases, Hazard- and EU Hazard-statements

### R-phrases:

- R10 Flammable.
- R36/37/38 Irritating to eyes, respiratory system and skin.
- R43 May cause sensitization by skin contact.

### Safety Advice (S-phrases):

- S2 Keep out of the reach of children.
- S9 Keep container in a well-ventilated place.

### Hazard statement:

- H226: Flammable liquid and vapour.
- H332: Harmful if inhaled.
- H315: Causes skin irritation.

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H319: Causes serious eye irritation.

H335: May cause respiratory irritation.

H317: May cause an allergic skin reaction.

**Precautionary statements:**

P280 Wear protective gloves/protective clothing/eye protection/face protection.

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

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

P273 Avoid release to the environment.

P241 Use explosion-proof electrical/ventilating/lighting/equipment.

P233 Keep container tightly closed.

Precautionary Statements (Response):

P337 + P313 If eye irritation persists: Get medical advice/attention.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

P303 + P361 + P353 If on skin (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.

P370 + P378 In case of fire: Use water spray, dry powder, foam or carbon dioxide for extinction.

Precautionary Statements (Storage):

P403 + P235 Store in a well-ventilated place. Keep cool.

Precautionary Statements (Disposal):

P501 Dispose of contents/container to hazardous or special waste collection point.

**16.4 List of ES (exposure scenario) given in Appendix I to the extended SDS**

- ES1 Manufacture and distribution of the substance
- ES2 Polymerization at production sites
- ES3 Polymerization at downstream user sites
- ES4 Manufacture of intermediates at downstream user sites
- ES5 Use as a laboratory agent

**DISCLAIMER**

*This information is based on our current level of knowledge. This information may be subject to revision as new knowledge and experience becomes available, and SIBUR makes no warranties and assumes no liability in connection with any use of this information. Since SIBUR cannot be aware of all aspects of your business and the impact the REACH Regulation has for your company, SIBUR strongly encourages you to get familiar with the REACH Regulation in order to comply with its requirements and timelines.*



Annex 1

Relevant identified uses of the substance

Table 1. Uses by workers in industrial settings

Confidential	IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
	1	Manufacture and distribution of the substance	as such (substance itself)	<p><b>Process category (PROC):</b>            PROC 1: Use in closed process, no likelihood of exposure            PROC 2: Use in closed, continuous process with occasional controlled exposure            PROC 3: Use in closed batch process (synthesis or formulation)            PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities            PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities            PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing)</p> <p><b>Market sector by type of chemical product:</b>            PC 19: Intermediate</p> <p><b>Environmental release category (ERC):</b>            ERC 1: Manufacture of substances</p> <p><b>Sector of end use (SU):</b>            SU 8: Manufacture of bulk, large scale chemicals (including petroleum products)            SU 9: Manufacture of fine chemicals</p> <p><b>Subsequent service life relevant for that use?: no</b></p>
	2	Polymerization at production sites	as such (substance itself)	<p><b>Process category (PROC):</b>            PROC 1: Use in closed process, no likelihood of exposure            PROC 2: Use in closed, continuous process with occasional controlled exposure            PROC 3: Use in closed batch process (synthesis or formulation)            PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises            PROC 5: Mixing or blending in batch processes for formulation of preparations and</p>



Confidential	IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
				articles (multistage and/or significant contact) PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>Market sector by type of chemical product:</b> PC 19: Intermediate PC 32: Polymer preparations and compounds <b>Environmental release category (ERC):</b> ERC 6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers ERC 6c: Industrial use of monomers for manufacture of thermoplastics <b>Sector of end use (SU):</b> SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals SU 12: Manufacture of plastics products, including compounding and conversion <b>Subsequent service life relevant for that use?: no</b>
	3	Polymerization at downstream user sites	as such (substance itself)	<b>Process category (PROC):</b> PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to



Confidential	IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
				vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>Market sector by type of chemical product:</b> PC 19: Intermediate PC 32: Polymer preparations and compounds <b>Environmental release category (ERC):</b> ERC 6d: Industrial use of process regulators for polymerisation processes in production of resins, rubbers, polymers ERC 6c: Industrial use of monomers for manufacture of thermoplastics <b>Sector of end use (SU):</b> SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals SU 12: Manufacture of plastics products, including compounding and conversion <b>Subsequent service life relevant for that use?: no</b>
	4	Manufacture of intermediates at downstream user sites	as such (substance itself)	<b>Process category (PROC):</b> PROC 1: Use in closed process, no likelihood of exposure PROC 2: Use in closed, continuous process with occasional controlled exposure PROC 3: Use in closed batch process (synthesis or formulation) PROC 4: Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5: Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact) PROC 8a: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at non-dedicated facilities PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) <b>Market sector by type of chemical product:</b>



Confidential	IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
				PC 19: Intermediate PC 32: Polymer preparations and compounds <b>Environmental release category (ERC):</b> ERC 6a: Industrial use resulting in manufacture of another substance (use of intermediates) <b>Sector of end use (SU):</b> SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals <b>Subsequent service life relevant for that use?: no</b>
	5	Use as a laboratory agent	as such (substance itself)	<b>Process category (PROC):</b> PROC 15: Use as laboratory reagent <b>Market sector by type of chemical product:</b> PC 19: Intermediate PC 21: Laboratory chemicals <b>Environmental release category (ERC):</b> ERC 1: Manufacture of substances <b>Sector of end use (SU):</b> SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) SU 9: Manufacture of fine chemicals SU 24: Scientific research and development <b>Subsequent service life relevant for that use?: no</b>

**Most common technical function of substance (what it does):**

-intermediates