

Safety Data Sheet

according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA
GHS

Printing date 29.05.2015

Revision: 29.05.2015

SECTION 1: Identification of the substance/mixture and of the company/undertaking

- **1.1 Product identifier**
- **Trade name:** Aluma-Brite
- **Article number:** 1350
- **1.2 Relevant identified uses of the substance or mixture and uses advised against**
No further relevant information available.
- **Application of the substance / the mixture** Acidic cleaner.
- **1.3 Details of the supplier of the Safety Data Sheet**
- **Manufacturer/Supplier:**
ATCO International
1401 Barclay Circle, S.E.
Marietta, Ga 30060
770-424-7550
- **1.4 Emergency telephone number:**
ChemTel Inc.
(800)255-3924, +1 (813)248-0585

SECTION 2: Hazards identification

- **2.1 Classification of the substance or mixture**
- **Classification according to Regulation (EC) No 1272/2008**
The following Hazard Statements are applicable only to the EU regulations and not the US GHS regulation: H412.
Classifications listed also are applicable to the OSHA GHS Hazard Communication Standard (29CFR1910.1200).



corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.



Acute Tox. 4 H312 Harmful in contact with skin.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

- **Classification according to Directive 67/548/EEC or Directive 1999/45/EC**



C; Corrosive

R34: Causes burns.



Xn; Harmful

R21: Harmful in contact with skin.

R52/53: Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

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- **Information concerning particular hazards for human and environment:**

The product has to be labelled due to the calculation procedure of the "General Classification guideline for preparations of the EU" in the latest valid version.

- **Classification system:**

The classification is according to the latest editions of the EU-lists, and extended by company and literature data.

The classification is in accordance with the latest editions of international substances lists, and is supplemented by information from technical literature and by information provided by the company.

- **Additional information:**

There are no other hazards not otherwise classified that have been identified.

0 percent of the mixture consists of component(s) of unknown toxicity

- **2.2 Label elements**

- **Labelling according to Regulation (EC) No 1272/2008**

The product is additionally classified and labelled according to the Globally Harmonized System within the United States (GHS).

The product is classified and labelled according to the CLP regulation.

- **Hazard pictograms**



GHS05 GHS07

- **Signal word** Danger

- **Hazard-determining components of labelling:**

ammonium bifluoride

2-butoxyethanol

hydrofluoric acid

- **Hazard statements**

The following Hazard Statements are applicable only to the EU regulations and not the US GHS regulation: H412.

H312 Harmful in contact with skin.

H314 Causes severe skin burns and eye damage.

H412 Harmful to aquatic life with long lasting effects.

- **Precautionary statements**

P260 Do not breathe mist/vapours/spray.

P280 Wear protective gloves / eye protection.

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

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

P312 Call a POISON CENTER/doctor if you feel unwell.

P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

- **Hazard description:**

- **WHMIS-symbols:**

D2B - Toxic material causing other toxic effects

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E - Corrosive material



· NFPA ratings (scale 0 - 4)



· HMIS-ratings (scale 0 - 4)



· HMIS Long Term Health Hazard Substances

None of the ingredients are listed.

· 2.3 Other hazards

· Results of PBT and vPvB assessment

· PBT: Not applicable.

· vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

· 3.2 Mixtures

· Description: Mixture of substances listed below with nonhazardous additions.

· Dangerous components:

CAS: 7664-38-2 EINECS: 231-633-2 Index number: 015-011-00-6	phosphoric acid C R34 Skin Corr. 1B, H314	2,5-10%
CAS: 1341-49-7 EINECS: 215-676-4 Index number: 009-009-00-4	ammonium bifluoride T R25; C R34 Acute Tox. 3, H301 Met. Corr.1, H290; Skin Corr. 1B, H314	2,5-10%
CAS: 9016-45-9 NLP: 500-024-6	4-nonylphenyl-polyethylene glycol Xi R36/38; N R51/53 Aquatic Chronic 2, H411 Skin Irrit. 2, H315; Eye Irrit. 2, H319	2,5-10%
CAS: 111-76-2 EINECS: 203-905-0 Index number: 603-014-00-0	2-butoxyethanol Xn R20/21/22; Xi R36/38 Acute Tox. 4, H302; Acute Tox. 4, H312; Acute Tox. 4, H332; Skin Irrit. 2, H315; Eye Irrit. 2, H319	≤ 2,5%

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CAS: 61789-40-0 EINECS: 263-058-8	Cocoamidopropyl Betaine  Xi R36/38  Skin Irrit. 2, H315; Eye Irrit. 2, H319	≤ 2,5%
CAS: 7664-39-3 EINECS: 231-634-8 Index number: 009-002-00-6	hydrofluoric acid  T+ R26/27/28;  C R35  Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330  Skin Corr. 1A, H314	< 1%

· **SVHC**

9016-45-9 | 4-nonylphenyl-polyethylene glycol

· **Additional information:**

For the listed ingredients, the identity and exact percentages are being withheld as a trade secret.
For the wording of the listed risk phrases refer to section 16.

SECTION 4: First aid measures· **4.1 Description of first aid measures**· **General information:**

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

Take affected persons out into the fresh air.

· **After inhalation:**

Supply fresh air; consult doctor in case of complaints.

Provide oxygen treatment if affected person has difficulty breathing.

In case of irregular breathing or respiratory arrest provide artificial respiration.

· **After skin contact:**

Immediately remove any clothing soiled by the product.

Immediately rinse with water.

If skin irritation continues, consult a doctor.

Rub in Ca-gluconate solution or Ca-gluconate gel immediately.

Seek immediate medical help for blistering or open wounds.

· **After eye contact:**

Protect unharmed eye.

Remove contact lenses if worn.

Rinse opened eye for several minutes under running water. Then consult a doctor.

· **After swallowing:**

Rinse out mouth and then drink plenty of water.

Do not induce vomiting; call for medical help immediately.

· **4.2 Most important symptoms and effects, both acute and delayed**

Headache

Gastric or intestinal disorders when ingested.

Nausea in case of ingestion.

Coughing

Cramp

Breathing difficulty

Strong caustic effect on skin and mucous membranes.

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- **Hazards**
 - Danger of gastric perforation.
 - Danger of disturbed cardiac rhythm.
 - Danger of convulsion.
 - Possible risk of irreversible effects.
 - Causes serious eye damage.
- **4.3 Indication of any immediate medical attention and special treatment needed**
 - Contains soluble fluorides. Consult literature for specific antidotes.
 - Monitor circulation, possible shock treatment.
 - Medical supervision for at least 48 hours.
 - If necessary oxygen respiration treatment.

SECTION 5: Firefighting measures

- **5.1 Extinguishing media**
- **Suitable extinguishing agents:** Use fire extinguishing methods suitable to surrounding conditions.
- **For safety reasons unsuitable extinguishing agents:** None.
- **5.2 Special hazards arising from the substance or mixture**
 - During heating or in case of fire poisonous gases are produced.
- **5.3 Advice for firefighters**
- **Protective equipment:**
 - Wear self-contained respiratory protective device.
 - Wear fully protective suit.
- **Additional information** No further relevant information available.

SECTION 6: Accidental release measures

- **6.1 Personal precautions, protective equipment and emergency procedures**
 - Wear protective equipment. Keep unprotected persons away.
 - Ensure adequate ventilation
 - Isolate area and prevent access.
 - For large spills, use respiratory protective device against the effects of fumes/dust/aerosol.
- **6.2 Environmental precautions:**
 - Do not allow to enter sewers/ surface or ground water.
 - Inform respective authorities in case of seepage into water course or sewage system.
- **6.3 Methods and material for containment and cleaning up:**
 - Use limestone to neutralize and absorb spill.
 - Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
 - Dispose contaminated material as waste according to item 13.
 - Send for recovery or disposal in suitable receptacles.
- **6.4 Reference to other sections**
 - See Section 7 for information on safe handling.
 - See Section 8 for information on personal protection equipment.
 - See Section 13 for disposal information.

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SECTION 7: Handling and storage

- **7.1 Precautions for safe handling**
Prevent formation of aerosols.
Avoid splashes or spray in enclosed areas.
Use only in well ventilated areas.
- **Information about fire - and explosion protection:** Keep respiratory protective device available.
- **7.2 Conditions for safe storage, including any incompatibilities**
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
Store only in the original receptacle.
Unsuitable material for receptacle: glass or ceramic.
Unsuitable material for receptacle: steel.
Unsuitable material for receptacle: aluminium.
- **Information about storage in one common storage facility:**
Store away from foodstuffs.
Do not store together with alkalis (caustic solutions).
Store away from oxidising agents.
Store away from metals.
- **Further information about storage conditions:** Store in cool, dry conditions in well sealed receptacles.
- **7.3 Specific end use(s)** No further relevant information available.

SECTION 8: Exposure controls/personal protection

- **Additional information about design of technical facilities:** No further data; see item 7.
- **8.1 Control parameters**

Ingredients with limit values that require monitoring at the workplace:

7664-38-2 phosphoric acid

IOELV (EU)	Short-term value: 2 mg/m ³ Long-term value: 1 mg/m ³
PEL (USA)	Long-term value: 1 mg/m ³
REL (USA)	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³
TLV (USA)	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³
EL (Canada)	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³
EV (Canada)	Short-term value: 3 mg/m ³ Long-term value: 1 mg/m ³

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111-76-2 2-butoxyethanol

IOELV (EU)	Short-term value: 246 mg/m ³ , 50 ppm Long-term value: 98 mg/m ³ , 20 ppm Skin
PEL (USA)	Long-term value: 240 mg/m ³ , 50 ppm Skin
REL (USA)	Long-term value: 24 mg/m ³ , 5 ppm Skin
TLV (USA)	Long-term value: 97 mg/m ³ , 20 ppm BEI
EL (Canada)	Long-term value: 20 ppm
EV (Canada)	Long-term value: 20 ppm Skin

7664-39-3 hydrofluoric acid

IOELV (EU)	Short-term value: 2,5 mg/m ³ , 3 ppm Long-term value: 1,5 mg/m ³ , 1,8 ppm
PEL (USA)	Long-term value: 3 ppm as F
REL (USA)	Long-term value: 2,5 mg/m ³ , 3 ppm Ceiling limit: 5* mg/m ³ , 6* ppm *15-min, as F
TLV (USA)	Long-term value: 0,41 mg/m ³ , 0,5 ppm Ceiling limit: 1,64 mg/m ³ , 2 ppm as F; Skin, BEI
EL (Canada)	Ceiling limit: 2 ppm
EV (Canada)	Long-term value: 0,5 ppm Ceiling limit: 2 ppm as F

- **DNELs** No further relevant information available.
- **PNECs** No further relevant information available.

· **Ingredients with biological limit values:****111-76-2 2-butoxyethanol**

BEI (USA)	200 mg/g creatinine Medium: urine Time: end of shift Parameter: Butoxyacetic acid with hydrolysis
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7664-39-3 hydrofluoric acid

BEI (USA)	3 mg/g creatinine Medium: urine Time: prior to shift Parameter: Fluorides (background, nonspecific)
	10 mg/g creatinine Medium: urine Time: end of shift Parameter: Fluorides (background, nonspecific)

- **Additional information:** The lists valid during the making were used as basis.
- **8.2 Exposure controls**
- **Personal protective equipment:**
- **General protective and hygienic measures:**
 The usual precautionary measures are to be adhered to when handling chemicals.
 Keep away from foodstuffs, beverages and feed.
 Do not inhale gases / fumes / aerosols.
 Immediately remove all soiled and contaminated clothing.
 Wash hands before breaks and at the end of work.
 Avoid contact with the eyes and skin.
- **Respiratory protection:**
 Use suitable respiratory protective device when high concentrations are present.
 Use suitable respiratory protective device when aerosol or mist is formed.
 For spills, respiratory protection may be advisable.
- **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation.

- **Material of gloves**
 The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.
- **Penetration time of glove material**
 The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.
- **For the permanent contact gloves made of the following materials are suitable:**
 PVC gloves
 Butyl rubber, BR
- **Eye protection:**
 Contact lenses should not be worn.

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Safety glasses

- **Body protection:** Acid resistant protective clothing
- **Limitation and supervision of exposure into the environment**
No further relevant information available.
- **Risk management measures**
Special materials should be readily available for skin exposures and for spills. See Section 4 for skin exposure information, and Section 6 for spill control information.
See Section 7 for additional information.
No further relevant information available.

SECTION 9: Physical and chemical properties

- **9.1 Information on basic physical and chemical properties**
- **General Information**
- **Appearance:**
 - **Form:** Liquid
 - **Colour:** Clear
 - **Odour:** Pungent
 - **Odour threshold:** Not determined.
- **pH-value at 20 °C (68 °F):** < 1
- **Change in condition**
 - **Melting point/Melting range:** Not Determined.
 - **Boiling point/Boiling range:** Undetermined.
- **Flash point:** Not applicable.
- **Flammability (solid, gaseous):** Not applicable.
- **Auto/Self-ignition temperature:** Not determined.
- **Decomposition temperature:** Not determined.
- **Self-igniting:** Product is not self-igniting.
- **Danger of explosion:** Product does not present an explosion hazard.
- **Explosion limits:**
 - **Lower:** Not determined.
 - **Upper:** Not determined.
- **Vapour pressure:** Not determined.
- **Density at 20 °C (68 °F):** 1,05 g/cm³ (8,762 lbs/gal)
- **Relative density** Not determined.
- **Vapour density** Not determined.
- **Evaporation rate** Not determined.

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- **Solubility in / Miscibility with water:** Fully miscible.
- **Partition coefficient (n-octanol/water):** Not determined.
- **Viscosity:**
 - Dynamic:** Not determined.
 - Kinematic:** Not determined.
- **9.2 Other information** No further relevant information available.

SECTION 10: Stability and reactivity

- **10.1 Reactivity**
- **10.2 Chemical stability**
- **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
To avoid thermal decomposition do not overheat.
- **10.3 Possibility of hazardous reactions**
Develops toxic gases/fumes.
Reacts with certain metals.
Reacts with strong alkali.
Reacts with strong acids and oxidising agents.
Attacks materials containing glass and silicate.
Reacts with metals forming hydrogen.
- **10.4 Conditions to avoid** Keep away from heat and direct sunlight.
- **10.5 Incompatible materials:** No further relevant information available.
- **10.6 Hazardous decomposition products:**
Phosphorus oxides (e.g. P₂O₅)
Nitrogen oxides (NO_x)
Ammonia
Hydrogen fluoride

SECTION 11: Toxicological information

- **11.1 Information on toxicological effects**
- **Acute toxicity:**

· LD/LC50 values relevant for classification:		
1341-49-7 ammonium bifluoride		
Oral	LD50	130 mg/kg (rat)
9016-45-9 4-nonylphenyl-polyethylene glycol		
Oral	LD50	4290 mg/kg (mouse)
7664-39-3 hydrofluoric acid		
Oral	LD50	1276 mg/kg (rat)

- **Primary irritant effect:**
- **on the skin:** Strong caustic effect on skin and mucous membranes.

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- **on the eye:** Strong caustic effect.
- **Sensitisation:** No sensitising effects known.
- **Subacute to chronic toxicity:** Toxic and/or corrosive effects may be delayed up to 24 hours.
- **Additional toxicological information:**

The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:

Harmful

Corrosive

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

- **Acute effects (acute toxicity, irritation and corrosivity):**
Harmful in contact with skin.
May be harmful if inhaled.
- **Repeated dose toxicity:** May cause damage to organs through prolonged or repeated exposure.
- **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):** None.

SECTION 12: Ecological information

- **12.1 Toxicity**
- **Aquatic toxicity:**
The material is harmful to the environment.

9016-45-9 4-nonylphenyl-polyethylene glycol

LC50	1,821 mg/l (daphnia) (48 h)
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- **12.2 Persistence and degradability** No further relevant information available.
- **12.3 Bioaccumulative potential** No further relevant information available.
- **12.4 Mobility in soil** No further relevant information available.
- **Ecotoxicological effects:**
- **Remark:** Harmful to fish
- **Additional ecological information:**
- **General notes:**
Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water
Do not allow product to reach ground water, water course or sewage system.
Must not reach sewage water or drainage ditch undiluted or unneutralised.
Danger to drinking water if even small quantities leak into the ground.
Harmful to aquatic organisms
Rinse off of bigger amounts into drains or the aquatic environment may lead to decreased pH-values. A low pH-value harms aquatic organisms. If the dilution of the use-level pH-value is considerably increased after use, the aqueous waste, emptied into drains, is only low water-dangerous.
- **12.5 Results of PBT and vPvB assessment**
- **PBT:** Not applicable.
- **vPvB:** Not applicable.
- **12.6 Other adverse effects** No further relevant information available.

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SECTION 13: Disposal considerations

· 13.1 Waste treatment methods

· Recommendation

Must not be disposed together with household garbage. Do not allow product to reach sewage system. Dilute concentrate with water and neutralize afterwards with suitable material (lime or chalk). The formed salts are inert and pose little hazard.

The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes. Residual materials should be treated as hazardous.

· Uncleaned packaging:

· Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

· 14.1 UN-Number

· DOT, ADR, IMDG, IATA

UN1760

· 14.2 UN proper shipping name



Limited Quantity for packages less than 30 kg (66 lb) and inner packagings less than 5 L (1.3 gal).

· DOT

Corrosive liquids, n.o.s. (Ammonium hydrogendifluoride, Phosphoric acid)

· ADR

1760 CORROSIVE LIQUID, N.O.S. (AMMONIUM HYDROGENDIFLUORIDE, PHOSPHORIC ACID)

· IMDG

CORROSIVE LIQUID, N.O.S. (AMMONIUM HYDROGENDIFLUORIDE, PHOSPHORIC ACID)

· IATA

Corrosive liquid, n.o.s. (Ammonium hydrogendifluoride, Phosphoric acid)

· 14.3 Transport hazard class(es)

· DOT



· Class

8 Corrosive substances.

· Label

8

· ADR



· Class

8 (C9) Corrosive substances.

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· Label	8

· IMDG, IATA	
	
· Class	8 Corrosive substances.
· Label	8
· 14.4 Packing group	
· DOT, ADR, IMDG, IATA	III
· 14.5 Environmental hazards:	
· Marine pollutant:	No
· 14.6 Special precautions for user	Warning: Corrosive substances.
· Danger code (Kemler):	80
· EMS Number:	F-A,S-B
· Segregation groups	Acids
· 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.

· Transport/Additional information:	
· ADR	
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· Transport category	3
· Tunnel restriction code	E

· IMDG	
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 1000 ml
· UN "Model Regulation":	UN1760, CORROSIVE LIQUID, N.O.S. (AMMONIUM HYDROGENDIFLUORIDE, PHOSPHORIC ACID), 8, III

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- United States (USA)
- SARA

· Section 355 (extremely hazardous substances):

7664-39-3	hydrofluoric acid
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· Section 313 (Specific toxic chemical listings):

7664-38-2	phosphoric acid
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111-76-2	2-butoxyethanol
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· TSCA (Toxic Substances Control Act):		
All ingredients are listed.		
· Proposition 65 (California):		
· Chemicals known to cause cancer:		
None of the ingredients is listed.		
· Chemicals known to cause reproductive toxicity for females:		
None of the ingredients are listed.		
· Chemicals known to cause reproductive toxicity for males:		
None of the ingredients are listed.		
· Chemicals known to cause developmental toxicity:		
None of the ingredients are listed.		
· Carcinogenic Categories		
· EPA (Environmental Protection Agency)		
111-76-2	2-butoxyethanol	NL
· IARC (International Agency for Research on Cancer)		
1341-49-7	ammonium bifluoride	3
111-76-2	2-butoxyethanol	3
· TLV (Threshold Limit Value established by ACGIH)		
1341-49-7	ammonium bifluoride	A4
111-76-2	2-butoxyethanol	A3
· NIOSH-Ca (National Institute for Occupational Safety and Health)		
None of the ingredients are listed.		
· Canada		
· Canadian Domestic Substances List (DSL)		
All ingredients are listed.		
· Canadian Ingredient Disclosure list (limit 0.1%)		
None of the ingredients are listed.		
· Canadian Ingredient Disclosure list (limit 1%)		
7664-38-2	phosphoric acid	
111-76-2	2-butoxyethanol	
· Other regulations, limitations and prohibitive regulations		
This product has been classified in accordance with hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.		
· Substances of very high concern (SVHC) according to REACH, Article 57		
9016-45-9	4-nonylphenyl-polyethylene glycol	
· 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.		

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SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases

H290	May be corrosive to metals.
H300	Fatal if swallowed.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H310	Fatal in contact with skin.
H312	Harmful in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H330	Fatal if inhaled.
H332	Harmful if inhaled.
H411	Toxic to aquatic life with long lasting effects.
.....	
R20/21/22	Harmful by inhalation, in contact with skin and if swallowed.
R25	Toxic if swallowed.
R26/27/28	Very toxic by inhalation, in contact with skin and if swallowed.
R34	Causes burns.
R35	Causes severe burns.
R36/38	Irritating to eyes and skin.
R51/53	Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 GHS: Globally Harmonised System of Classification and Labelling of Chemicals
 ACGIH: American Conference of Governmental Industrial Hygienists
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 NFPA: National Fire Protection Association (USA)
 HMIS: Hazardous Materials Identification System (USA)
 WHMIS: Workplace Hazardous Materials Information System (Canada)
 DNEL: Derived No-Effect Level (REACH)
 PNEC: Predicted No-Effect Concentration (REACH)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 Met. Corr. 1: Corrosive to metals, Hazard Category 1
 Acute Tox. 2: Acute toxicity, Hazard Category 2
 Acute Tox. 3: Acute toxicity, Hazard Category 3
 Acute Tox. 4: Acute toxicity, Hazard Category 4
 Acute Tox. 1: Acute toxicity, Hazard Category 1
 Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A
 Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B
 Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2
 Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2
 Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2
 Aquatic Chronic 3: Hazardous to the aquatic environment - Chronic Hazard, Category 3

(Contd. on page 16)

Safety Data Sheet
according to 1907/2006/EC (REACH), 1272/2008/EC (CLP), and OSHA
GHS

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· **Sources**

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