



# SAFETY DATA SHEET

DOW CHEMICAL IBERICA S.L.

Safety Data Sheet according to Reg. (EU) No 2015/830

**Product name: DOWSIL™ 993 Structural Glazing Catalyst  
Black**

**Revision Date:** 22.12.2020

**Version:** 4.0

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DOW CHEMICAL IBERICA S.L. encourages and expects you to read and understand the entire (M)SDS, as there is important information throughout the document. We expect you to follow the precautions identified in this document unless your use conditions would necessitate other appropriate methods or actions.

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## SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

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### 1.1 Product identifier

**Product name:** DOWSIL™ 993 Structural Glazing Catalyst Black  
**UFI:** 29C8-30WD-J008-DYXE

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Identified uses:** Vulcanising agents

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

**COMPANY IDENTIFICATION**  
DOW CHEMICAL IBERICA S.L.  
CALLE JOSE ABASCAL 56  
28003 MADRID  
SPAIN

**Customer Information Number:**

(091) 740 77 00  
SDSQuestion@dow.com

### 1.4 EMERGENCY TELEPHONE NUMBER

**24-Hour Emergency Contact:** 0034 9775 43620  
**Local Emergency Contact:** 00 34 977 54 36 20  
**National Institute of Toxicology:** + 34 91 562 04 20

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## SECTION 2: HAZARDS IDENTIFICATION

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### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008:**

Flammable liquids - Category 3 - H226  
Skin irritation - Category 2 - H315  
Serious eye damage - Category 1 - H318  
Skin sensitisation - Category 1 - H317  
Specific target organ toxicity - repeated exposure - Category 2 - Oral - H373  
For the full text of the H-Statements mentioned in this Section, see Section 16.

## 2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008:

### Hazard pictograms



Signal word: **DANGER**

### Hazard statements

H226	Flammable liquid and vapour.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H373	May cause damage to organs (Bladder) through prolonged or repeated exposure if swallowed.

### Precautionary statements

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P260	Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264	Wash skin thoroughly after handling.
P280	Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
P305 + P351 + P338 + P310	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.
P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

**Contains** Methyltrimethoxysilane; N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine; Bis(trimethoxysilyl)hexane; 3-aminopropyltriethoxysilane; Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane

## 2.3 Other hazards

Static-accumulating flammable liquid.

This product contains no substances assessed to be PBT or vPvB at levels of 0.1% or higher.

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## SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

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**Chemical nature:** Mixture of Methyl Siloxane and Organic Compound

### 3.2 Mixtures

This product is a mixture.

CASRN / EC-No. / Index-No.	REACH Registration Number	Concentration	Component	Classification: REGULATION (EC) No 1272/2008
<b>CASRN</b> 474530-85-3 <b>EC-No.</b> 610-348-0 <b>Index-No.</b> –	–	>= 10,0 - <= 14,0 %	Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane	Eye Irrit. - 2 - H319
<b>CASRN</b> 1185-55-3 <b>EC-No.</b> 214-685-0 <b>Index-No.</b> –	01-2119517436-40	>= 10,0 - <= 14,0 %	Methyltrimethoxysilane	Flam. Liq. - 2 - H225 Skin Sens. - 1B - H317
<b>CASRN</b> 1760-24-3 <b>EC-No.</b> 217-164-6 <b>Index-No.</b> –	01-2119970215-39	>= 4,0 - <= 6,0 %	N-(3-(Trimethoxysilyl)propyl)-1,2-ethanediamine	Acute Tox. - 4 - H332 Eye Dam. - 1 - H318 Skin Sens. - 1B - H317 STOT RE - 2 - H373
<b>CASRN</b> 87135-01-1 <b>EC-No.</b> 617-969-6 <b>Index-No.</b> –	01-2119420448-41	>= 3,0 - <= 5,0 %	Bis(trimethoxysilyl)hexane	STOT RE - 1 - H372
<b>CASRN</b> 919-30-2 <b>EC-No.</b> 213-048-4 <b>Index-No.</b> 612-108-00-0	01-2119480479-24	>= 0,77 - <= 1,05 %	3-aminopropyltriethoxysilane	Acute Tox. - 4 - H302 Skin Corr. - 1B - H314 Eye Dam. - 1 - H318 Skin Sens. - 1B - H317
<b>CASRN</b> 67-56-1 <b>EC-No.</b> 200-659-6 <b>Index-No.</b> 603-001-00-X	–	>= 0,72 - <= 0,98 %	methanol	Flam. Liq. - 2 - H225 Acute Tox. - 3 - H301 Acute Tox. - 3 - H331 Acute Tox. - 3 - H311 STOT SE - 1 - H370
<b>CASRN</b> 68928-76-7 <b>EC-No.</b> 273-028-6 <b>Index-No.</b> –	01-2120770324-57	>= 0,09 - <= 0,12 %	Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane	Acute Tox. - 4 - H302 Skin Irrit. - 2 - H315 Skin Sens. - 1A - H317 Aquatic Chronic - 3 - H412

For the full text of the H-Statements mentioned in this Section, see Section 16.

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## SECTION 4: FIRST AID MEASURES

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### 4.1 Description of first aid measures

#### General advice:

First Aid responders should pay attention to self-protection and use the recommended protective clothing (chemical resistant gloves, splash protection). If potential for exposure exists refer to Section 8 for specific personal protective equipment.

**Inhalation:** Move person to fresh air and keep comfortable for breathing. If not breathing, give artificial respiration; if by mouth to mouth use rescuer protection (pocket mask, etc). If breathing is difficult, oxygen should be administered by qualified personnel. Call a physician or transport to a medical facility.

**Skin contact:** Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Obtain medical attention without delay. Wash clothing before reuse. Properly dispose of contaminated leather items, such as shoes, belts, and watchbands. Suitable emergency safety shower facility should be immediately available.

**Eye contact:** Wash immediately and continuously with flowing water for at least 30 minutes. Remove contact lenses after the first 5 minutes and continue washing. Obtain prompt medical consultation, preferably from an ophthalmologist. Suitable emergency eye wash facility should be immediately available.

**Ingestion:** Do NOT induce vomiting. Seek medical attention immediately. If person is fully conscious give 1 cup or 8 ounces (240 ml) of water. If medical advice is delayed and if an adult has swallowed several ounces of chemical, then give 3-4 ounces (1/3-1/2 Cup) (90-120 ml) of hard liquor such as 80 proof whiskey. For children, give proportionally less liquor at a dose of 0.3 ounce (1 1/2 tsp.) (8 ml) liquor for each 10 pounds of body weight, or 2 ml per kg body weight [e.g., 1.2 ounce (2 1/3 tbsp.) for a 40 pound child or 36 ml for an 18 kg child].

### 4.2 Most important symptoms and effects, both acute and delayed:

Aside from the information found under Description of first aid measures (above) and Indication of immediate medical attention and special treatment needed (below), any additional important symptoms and effects are described in Section 11: Toxicology Information.

### 4.3 Indication of any immediate medical attention and special treatment needed

**Notes to physician:** Maintain adequate ventilation and oxygenation of the patient. In cases where several ounces (60 - 100 ml) have been ingested, consider the use of ethanol and hemodialysis in the treatment. Consult standard literature for details of treatment. If ethanol is used, a therapeutically effective blood concentration in the range of 100 - 150 mg/dl may be achieved by a rapid loading dose followed by a continuous intravenous infusion. Consult standard literature for details of treatment. 4-Methyl pyrazole (Antizol®) is an effective blocker of alcohol dehydrogenase and should be used in the treatment of ethylene glycol (EG), di- or triethylene glycol (DEG, TEG), ethylene glycol butyl ether (EGBE), or methanol intoxication if available. Fomepizole protocol (Brent, J. et al., New England Journal of Medicine, Feb. 8, 2001, 344:6, p. 424-9): loading dose 15 mg/kg intravenously, follow by bolus dose of 10 mg/kg every 12 hours; after 48 hours, increase bolus dose to 15 mg/kg every 12 hours. Continue fomepizole until serum methanol, EG, DEG, TEG or EGBE are undetectable. The signs and symptoms of poisoning include anion gap metabolic acidosis, CNS depression, renal tubular injury, and possible late stage cranial nerve involvement. May cause asthma-like (reactive airways) symptoms. Bronchodilators, expectorants, antitussives and corticosteroids may be of help. Respiratory symptoms, including pulmonary edema, may be delayed. Persons receiving significant exposure should be observed 24-48 hours for signs of respiratory distress. In severe poisoning,

respiratory support with mechanical ventilation and positive end expiratory pressure may be required. If lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying the stomach. Chemical eye burns may require extended irrigation. Obtain prompt consultation, preferably from an ophthalmologist. If burn is present, treat as any thermal burn, after decontamination. Treatment of exposure should be directed at the control of symptoms and the clinical condition of the patient. Excessive exposure may aggravate preexisting asthma and other respiratory disorders (e.g. emphysema, bronchitis, reactive airways dysfunction syndrome).

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## SECTION 5: FIREFIGHTING MEASURES

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### 5.1 Extinguishing media

**Suitable extinguishing media:** Alcohol-resistant foam. Dry sand. Dry chemical.

**Unsuitable extinguishing media:** High volume water jet. Do not use direct water stream..

### 5.2 Special hazards arising from the substance or mixture

**Hazardous combustion products:** Carbon oxides. Silicon oxides. Nitrogen oxides (NOx). Formaldehyde.

**Unusual Fire and Explosion Hazards:** Flash back possible over considerable distance.. Exposure to combustion products may be a hazard to health.. Flammable concentrations of vapor can accumulate at temperatures above flash point; see Section 9.. Flammable mixtures may exist within the vapor space of containers at room temperature.. Closed containers may rupture via pressure build-up when exposed to fire or extreme heat.. Vapours may form explosive mixtures with air..

### 5.3 Advice for firefighters

**Fire Fighting Procedures:** Use water spray to cool unopened containers.. Evacuate area.. Collect contaminated fire extinguishing water separately. This must not be discharged into drains.. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.. Contain fire water run-off if possible. Fire water run-off, if not contained, may cause environmental damage.. Use water spray to cool fire exposed containers and fire affected zone until fire is out and danger of reignition has passed.. Do not use a solid water stream as it may scatter and spread fire.. Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Remove undamaged containers from fire area if it is safe to do so.

**Special protective equipment for firefighters:** In the event of fire, wear self-contained breathing apparatus.. Use personal protective equipment..

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## SECTION 6: ACCIDENTAL RELEASE MEASURES

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**6.1 Personal precautions, protective equipment and emergency procedures:** Remove all sources of ignition. Use personal protective equipment. Eliminate all sources of ignition in vicinity of spill or released vapor to avoid fire or explosion. Ground and bond all containers and handling equipment.

Vapor explosion hazard. Keep out of sewers. Follow safe handling advice and personal protective equipment recommendations.

**6.2 Environmental precautions:** Do not release the product to the aquatic environment above defined regulatory levels. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g. by containment or oil barriers). Retain and dispose of contaminated wash water. Local authorities should be advised if significant spillages cannot be contained.

**6.3 Methods and materials for containment and cleaning up:** Non-sparking tools should be used. Soak up with inert absorbent material. Suppress (knock down) gases/vapours/mists with a water spray jet. Clean up remaining materials from spill with suitable absorbant. Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable. For large spills, provide dyking or other appropriate containment to keep material from spreading. If dyked material can be pumped, store recovered material in appropriate container.

**6.4 Reference to other sections:**

See sections: 7, 8, 11, 12 and 13.

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## SECTION 7: HANDLING AND STORAGE

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**7.1 Precautions for safe handling:** Do not get on skin or clothing. Avoid inhalation of vapour or mist. Do not swallow. Do not get in eyes. Keep container tightly closed. Keep away from heat and sources of ignition. Take precautionary measures against static discharges. Take care to prevent spills, waste and minimize release to the environment. Non-sparking tools should be used. Handle in accordance with good industrial hygiene and safety practice. CONTAINERS MAY BE HAZARDOUS WHEN EMPTY. Since emptied containers retain product residue follow all (M)SDS and label warnings even after container is emptied.

Use with local exhaust ventilation. Use only in an area equipped with explosion proof exhaust ventilation. Ensure all equipment is electrically grounded before beginning transfer operations. This material can accumulate static charge due to its inherent physical properties and can therefore cause an electrical ignition source to vapors. In order to prevent a fire hazard, as bonding and grounding may be insufficient to remove static electricity, it is necessary to provide an inert gas purge before beginning transfer operations. Restrict flow velocity in order to reduce the accumulation of static electricity. Ground and bond container and receiving equipment.

**7.2 Conditions for safe storage, including any incompatibilities:** Keep in properly labelled containers. Keep tightly closed. Keep in a cool, well-ventilated place. Store in accordance with the particular national regulations. Keep away from heat and sources of ignition.

Do not store with the following product types: Strong oxidizing agents. Organic peroxides. Flammable solids. Pyrophoric liquids. Pyrophoric solids. Self-heating substances and mixtures. Substances and mixtures, which in contact with water, emit flammable gases. Explosives. Gases. Unsuitable materials for containers: None known.

**7.3 Specific end use(s):** See the technical data sheet on this product for further information.

## SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

### 8.1 Control parameters

If exposure limits exist, they are listed below. If no exposure limits are displayed, then no values are applicable.

Component	Regulation	Type of listing	Value
Methyltrimethoxysilane	Dow IHG	TWA	7,5 ppm
	Further information: Skin Sensitizer		
N-(3-(Trimethoxysilyl)propyl)-1,2-ethanediamine	Dow IHG		See Further information
	Further information: Skin Sensitizer		
3-aminopropyltriethoxysilane	Dow IHG	TWA	0,5 mg/m <sup>3</sup>
methanol	ACGIH	TWA	200 ppm
	Further information: Skin: Danger of cutaneous absorption		
	ACGIH	STEL	250 ppm
	Further information: Skin: Danger of cutaneous absorption		
	2006/15/EC	TWA	260 mg/m <sup>3</sup> 200 ppm
	Further information: Indicative; skin: Identifies the possibility of significant uptake through the skin		
	ES VLA	VLA-ED	266 mg/m <sup>3</sup> 200 ppm
	Further information: via dérmica: Skin		
Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane	ACGIH	TWA	0,1 mg/m <sup>3</sup> , Tin
	Further information: A4: Not classifiable as a human carcinogen; Skin: Danger of cutaneous absorption		
	ACGIH	STEL	0,2 mg/m <sup>3</sup> , Tin
	Further information: A4: Not classifiable as a human carcinogen; Skin: Danger of cutaneous absorption		
	ES VLA	VLA-ED	0,1 mg/m <sup>3</sup> , Tin
	Further information: via dérmica: Skin		
	ES VLA	VLA-EC	0,2 mg/m <sup>3</sup> , Tin
	Further information: via dérmica: Skin		
Ethanol	ACGIH	TWA	1 000 ppm
	Further information: URT irr: Upper Respiratory Tract irritation		
	ACGIH	STEL	1 000 ppm
	Further information: URT irr: Upper Respiratory Tract irritation		
	ES VLA	VLA-EC	1 910 mg/m <sup>3</sup> 1 000 ppm

The following substance(s), which have Occupational Exposure Limit(s) (OEL), may be formed during handling or processing: Methanol, Ethanol

### Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
methanol	67-56-1	Methanol	Urine	End of workday	15 mg/l	ES VLB
		Methanol	Urine	End of shift (As soon as possible)	15 mg/l	ACGIH BEI

after  
exposure  
ceases)

### Recommended monitoring procedures

Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with the Occupational Exposure Limits and the adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples should be analysed by an accredited laboratory.

Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy); European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents); European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents). Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.

National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods.

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods.

Health and Safety Executive (HSE), United Kingdom: Methods for the Determination of Hazardous Substances.

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany.

L'Institut National de Recherche et de Sécurité, (INRS), France.

### Derived No Effect Level

Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane

#### Workers

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
14,5 mg/kg bw/day	25 mg/m3	n.a.	n.a.	14,5 mg/kg bw/day	25 mg/m3	n.a.	n.a.

#### Consumers

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	1 mg/kg bw/day	n.a.	n.a.	n.a.	n.a.	1 mg/kg bw/day	n.a.	n.a.

Methyltrimethoxysilane

#### Workers

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
0,38 mg/kg bw/day	25,6 mg/m3	n.a.	n.a.	0,38 mg/kg bw/day	25,6 mg/m3	n.a.	n.a.



**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
0,3 mg/kg bw/day	6,25 mg/m3	0,26 mg/kg bw/day	n.a.	n.a.	0,3 mg/kg bw/day	6,25 mg/m3	0,26 mg/kg bw/day	n.a.	n.a.

N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	5,36 mg/m3	n.a.	n.a.	n.a.	0,6 mg/m3

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	4 mg/m3	n.a.	n.a.	n.a.	n.a.	0,1 mg/m3

Bis(trimethoxysilyl)hexane

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	0,03 mg/kg bw/day	0,2 mg/m3	n.a.	n.a.

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	0,013 mg/kg bw/day	n.a.	n.a.	n.a.

3-aminopropyltriethoxysilane

**Workers**

<i>Acute systemic effects</i>		<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
8,3 mg/kg bw/day	59 mg/m3	n.a.	n.a.	8,3 mg/kg bw/day	59 mg/m3	n.a.	n.a.

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
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Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
5 mg/kg bw/day	17,4 mg/m3	5 mg/kg bw/day	n.a.	n.a.	5 mg/kg bw/day	17 mg/m3	5 mg/kg bw/day	n.a.	n.a.

methanol

**Workers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>		<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Dermal	Inhalation
40 mg/kg bw/day	260 mg/m3	n.a.	n.a.	260 mg/m3	40 mg/kg bw/day	260 mg/m3	n.a.	260 mg/m3

**Consumers**

<i>Acute systemic effects</i>			<i>Acute local effects</i>		<i>Long-term systemic effects</i>			<i>Long-term local effects</i>	
Dermal	Inhalation	Oral	Dermal	Inhalation	Dermal	Inhalation	Oral	Dermal	Inhalation
8 mg/kg bw/day	50 mg/m3	8 mg/kg bw/day	n.a.	50 mg/m3	8 mg/kg bw/day	50 mg/m3	8 mg/kg bw/day	n.a.	50 mg/m3

**Predicted No Effect Concentration**

Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane

Compartment	PNEC
Fresh water	0,13 mg/l
Marine water	0,013 mg/l
Fresh water sediment	0,1 mg/kg
Marine sediment	0,01 mg/kg
Soil	0,016 mg/kg
Sewage treatment plant	>= 100 mg/l

Methyltrimethoxysilane

Compartment	PNEC
Fresh water	>= 1,3 mg/l
Marine water	>= 0,13 mg/l
Fresh water sediment	>= 1,1 mg/kg
Marine sediment	>= 0,11 mg/kg
Soil	>= 0,17 mg/kg
Sewage treatment plant	> 6,9 mg/l

N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine

Compartment	PNEC
Fresh water	0,062 mg/l
Marine water	0,0062 mg/l
Fresh water sediment	0,22 mg/kg dry weight (d.w.)
Marine sediment	0,022 mg/kg dry weight (d.w.)
Soil	0,0085 mg/kg dry weight (d.w.)
Sewage treatment plant	25 mg/l

## Bis(trimethoxysilyl)hexane

Compartment	PNEC
Fresh water	0,074 mg/l
Marine water	0,007 mg/l
Fresh water sediment	0,27 mg/l
Soil	0,01 mg/l
Marine sediment	0,027 mg/l
Sewage treatment plant	74 mg/l

## 3-aminopropyltriethoxysilane

Compartment	PNEC
Fresh water	0,33 mg/l
Marine water	0,033 mg/l
Fresh water sediment	0,26 mg/kg
Marine sediment	0,026 mg/kg
Soil	0,04 mg/kg
Sewage treatment plant	13 mg/l

## methanol

Compartment	PNEC
Fresh water	20,8 mg/l
Marine water	2,08 mg/l
Intermittent use/release	1540 mg/l
Sewage treatment plant	100 mg/l
Fresh water sediment	77 mg/kg
Marine sediment	7,7 mg/kg
Soil	100 mg/kg

**8.2 Exposure controls**

**Engineering controls:** Use engineering controls to maintain airborne level below exposure limit requirements or guidelines. Local exhaust ventilation may be necessary for some operations. Lethal concentrations may exist in areas with poor ventilation.

**Individual protection measures**

**Eye/face protection:** Use chemical goggles. Chemical goggles should be consistent with EN 166 or equivalent.

**Skin protection**

**Hand protection:** Use chemical resistant gloves classified under Standard EN374: Protective gloves against chemicals and micro-organisms. Examples of preferred glove barrier materials include: Butyl rubber. Neoprene. Nitrile/butadiene rubber ("nitrile" or "NBR"). Ethyl vinyl alcohol laminate ("EVAL"). Polyvinyl alcohol ("PVA"). Polyvinyl chloride ("PVC" or "vinyl"). Viton. Examples of acceptable glove barrier materials include: Natural rubber ("latex"). When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended. When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according to EN 374) is recommended. Glove thickness alone is not a good indicator of the level of protection a glove provides against a chemical substance as this level of protection is also highly dependent on the specific

composition of the material that the glove is fabricated from. The thickness of the glove must, depending on model and type of material, generally be more than 0.35 mm to offer sufficient protection for prolonged and frequent contact with the substance. As an exception to this general rule it is known that multilayer laminate gloves may offer prolonged protection at thicknesses less than 0.35 mm. Other glove materials with a thickness of less than 0.35 mm may offer sufficient protection when only brief contact is expected. **NOTICE:** The selection of a specific glove for a particular application and duration of use in a workplace should also take into account all relevant workplace factors such as, but not limited to: Other chemicals which may be handled, physical requirements (cut/puncture protection, dexterity, thermal protection), potential body reactions to glove materials, as well as the instructions/specifications provided by the glove supplier.

**Other protection:** Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task.

**Respiratory protection:** Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply. For emergency and other conditions where the exposure guideline may be exceeded, use an approved positive-pressure self-contained breathing apparatus or positive-pressure air line with auxiliary self-contained air supply. In confined or poorly ventilated areas, use an approved self-contained breathing apparatus or positive pressure air line with auxiliary self-contained air supply.

#### Environmental exposure controls

See SECTION 7: Handling and storage and SECTION 13: Disposal considerations for measures to prevent excessive environmental exposure during use and waste disposal.

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## SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	viscous liquid
<b>Color</b>	black
<b>Odor</b>	alcohol-like
<b>Odor Threshold</b>	No data available
<b>pH</b>	No data available
<b>Melting point/range</b>	No data available
<b>Freezing point</b>	No data available
<b>Boiling point (760 mmHg)</b>	> 35 °C
<b>Flash point</b>	<b>closed cup</b> 27 °C
<b>Evaporation Rate (Butyl Acetate = 1)</b>	No data available
<b>Flammability (solid, gas)</b>	Not applicable
<b>Lower explosion limit</b>	No data available
<b>Upper explosion limit</b>	No data available
<b>Vapor Pressure</b>	No data available

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<b>Relative Vapor Density (air = 1)</b>	No data available
<b>Relative Density (water = 1)</b>	1,00
<b>Water solubility</b>	No data available
<b>Partition coefficient: n-octanol/water</b>	No data available
<b>Auto-ignition temperature</b>	No data available
<b>Decomposition temperature</b>	No data available
<b>Kinematic Viscosity</b>	15000 mm <sup>2</sup> /s at 25 °C
<b>Explosive properties</b>	Not explosive
<b>Oxidizing properties</b>	The substance or mixture is not classified as oxidizing.

#### 9.2 Other information

<b>Molecular weight</b>	No data available
<b>Particle size</b>	Not applicable

NOTE: The physical data presented above are typical values and should not be construed as a specification.

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## SECTION 10: STABILITY AND REACTIVITY

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**10.1 Reactivity:** Not classified as a reactivity hazard.

**10.2 Chemical stability:** Stable under normal conditions.

**10.3 Possibility of hazardous reactions:** Can react with strong oxidizing agents. Vapours may form explosive mixture with air. Flammable liquid and vapour.

**10.4 Conditions to avoid:** Avoid static discharge. Heat, flames and sparks.

**10.5 Incompatible materials:** Avoid contact with oxidizing materials.

**10.6 Hazardous decomposition products:**

Decomposition products can include and are not limited to: Formaldehyde. Ethanol. Methanol.

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## SECTION 11: TOXICOLOGICAL INFORMATION

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*Toxicological information appears in this section when such data is available.*

### 11.1 Information on toxicological effects

**Information on likely routes of exposure**

Inhalation, Eye contact, Skin contact, Ingestion.

**Acute toxicity (represents short term exposures with immediate effects - no chronic/delayed effects known unless otherwise noted)**

**Acute oral toxicity**

Very low toxicity if swallowed. Swallowing may result in irritation of the mouth, throat, and gastrointestinal tract. Contains a component(s) which hydrolyzes to methanol. Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart.

As product: Single dose oral LD50 has not been determined.

Based on information for component(s):  
LD50, > 5 000 mg/kg Estimated.

**Information for components:**

**Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

Single dose oral LD50 has not been determined.

**Methyltrimethoxysilane**

LD50, Rat, male and female, 11 685 mg/kg

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

LD50, Rat, male and female, 2 295 mg/kg OPPTS 870.1100

**Bis(trimethoxysilyl)hexane**

LD50, Rat, > 2 000 mg/kg No deaths occurred at this concentration.

**3-aminopropyltriethoxysilane**

LD50, Rat, female, 1 479 mg/kg

LD50, Rat, male, 2 665 mg/kg

**methanol**

Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart. Effects may be delayed. LD50, Rat, > 5 000 mg/kg

Lethal Dose, Humans, 340 mg/kg Estimated.

Lethal Dose, Humans, 29 - 237 ml Estimated.

**Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

LD50, Rat, male and female, 892 mg/kg OECD 401 or equivalent

**Acute dermal toxicity**

Prolonged skin contact is unlikely to result in absorption of harmful amounts. Contains a component(s) which hydrolyzes to methanol. Effects of methanol are the same as observed via oral and inhalation exposure and include central nervous system (CNS) depression, visual impairment up to blindness, metabolic acidosis, with effects on organ systems such as liver, kidneys and heart, even death.

As product: The dermal LD50 has not been determined.

Based on information for component(s):  
LD50, > 2 000 mg/kg Estimated.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

Based on data from similar materials LD50, Rabbit, > 2 000 mg/kg

**Methyltrimethoxysilane**

LD50, Rabbit, male and female, > 9 500 mg/kg OECD 402 or equivalent

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

LD50, Rabbit, > 2 000 mg/kg No deaths occurred at this concentration.

**Bis(trimethoxysilyl)hexane**

The dermal LD50 has not been determined.

**3-aminopropyltriethoxysilane**

Based on product testing: LD50, Rabbit, male and female, 4 041 mg/kg

**methanol**

Effects of methanol are the same as observed via oral and inhalation exposure and include central nervous system (CNS) depression, visual impairment up to blindness, metabolic acidosis, with effects on organ systems such as liver, kidneys and heart, even death. LD50, Rabbit, 15 800 mg/kg

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy[(dimethyl)stannane**

LD50, Rat, > 2 000 mg/kg

**Acute inhalation toxicity**

Brief exposure (minutes) is not likely to cause adverse effects. Vapor from heated material may cause respiratory irritation. Excessive exposure may cause severe irritation to upper respiratory tract (nose and throat) and lungs. Symptoms of excessive exposure may be anesthetic or narcotic effects; dizziness and drowsiness may be observed. Inhalation of methanol may cause effects ranging from headache, narcosis and visual impairment to metabolic acidosis, blindness, and even death.

As product: The LC50 has not been determined.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

The LC50 has not been determined.

**Methyltrimethoxysilane**

LC50, Rat, male and female, 6 Hour, vapour, > 7605 ppm OECD Test Guideline 403

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

LC50, Rat, 4 Hour, dust/mist, 1,49 - 2,44 mg/l OECD Test Guideline 403

**Bis(trimethoxysilyl)hexane**

LC50, Rat, male and female, 4 Hour, vapour, > 0,042 mg/l No deaths occurred at this concentration.

**3-aminopropyltriethoxysilane**

Based on product testing: LC50, Rat, male, 6 Hour, vapour, > 5 ppm No deaths occurred at this concentration.

Based on product testing: LC50, Rat, female, 6 Hour, vapour, > 16 ppm No deaths occurred at this concentration.

Based on product testing: LC50, Rat, male and female, 4 Hour, Aerosol, > 7,35 mg/l

**methanol**

Easily attainable vapor concentrations may cause serious adverse effects, even death. At lower concentrations: May cause respiratory irritation and central nervous system depression. Symptoms may include headache, dizziness and drowsiness, progressing to incoordination and unconsciousness. Inhalation of methanol may cause effects ranging from headache, narcosis and visual impairment to metabolic acidosis, blindness, and even death. Effects may be delayed.

LC50, Rat, 4 Hour, vapour, 3 mg/l

**Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

As product: The LC50 has not been determined.

**Skin corrosion/irritation**

Based on information for component(s):

Brief contact may cause moderate skin irritation with local redness.

**Information for components:**

**Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

Brief contact may cause slight skin irritation with local redness.

**Methyltrimethoxysilane**

Brief contact may cause slight skin irritation with local redness.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

Brief contact may cause moderate skin irritation with local redness.

**Bis(trimethoxysilyl)hexane**

Essentially nonirritating to skin.

**3-aminopropyltriethoxysilane**

Brief contact may cause severe skin burns. Symptoms may include pain, severe local redness and tissue damage.

**methanol**

Prolonged contact may cause slight skin irritation with local redness.

**Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

Brief contact may cause skin irritation with local redness.



**Serious eye damage/eye irritation**

Based on information for component(s):

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

May cause moderate eye irritation.

**Methyltrimethoxysilane**

May cause slight temporary eye irritation.

Corneal injury is unlikely.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

**Bis(trimethoxysilyl)hexane**

Essentially nonirritating to eyes.

**3-aminopropyltriethoxysilane**

May cause severe irritation with corneal injury which may result in permanent impairment of vision, even blindness. Chemical burns may occur.

Vapor or mist may cause eye irritation.

**methanol**

May cause eye irritation.

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

May cause slight eye irritation.

May cause slight temporary corneal injury.

**Sensitization**

For skin sensitization:

Contains component(s) which have caused allergic skin sensitization in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

For similar material(s):

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:

No relevant data found.

**Methyltrimethoxysilane**

For skin sensitization:  
Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:  
No relevant data found.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:  
No relevant data found.

**Bis(trimethoxysilyl)hexane**

Did not cause allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:  
No relevant data found.

**3-aminopropyltriethoxysilane**

For skin sensitization:  
Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:  
No relevant data found.

**methanol**

For skin sensitization:  
No relevant data found.

For respiratory sensitization:  
No relevant data found.

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy(dimethyl)stannane**

Has caused allergic skin reactions when tested in guinea pigs.

For respiratory sensitization:  
No relevant data found.

**Specific Target Organ Systemic Toxicity (Single Exposure)**

Available data are inadequate to determine single exposure specific target organ toxicity.

**Information for components:**

**Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**Methyltrimethoxysilane**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

Available data are inadequate to determine single exposure specific target organ toxicity.

**Bis(trimethoxysilyl)hexane**

Evaluation of available data suggests that this material is not an STOT-SE toxicant.

**3-aminopropyltriethoxysilane**

Material is corrosive. Material is not classified as a respiratory irritant; however, upper respiratory tract irritation or corrosivity may be expected.

**methanol**

Causes damage to organs.

Route of Exposure: Oral

Target Organs: Eyes, Central nervous system

**Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

Available data are inadequate to determine single exposure specific target organ toxicity.

**Aspiration Hazard**

Based on physical properties, not likely to be an aspiration hazard.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

Based on available information, aspiration hazard could not be determined.

**Methyltrimethoxysilane**

May be harmful if swallowed and enters airways.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

Based on available information, aspiration hazard could not be determined.

**Bis(trimethoxysilyl)hexane**

Based on available information, aspiration hazard could not be determined.

**3-aminopropyltriethoxysilane**

Based on available information, aspiration hazard could not be determined.

**methanol**

May be harmful if swallowed and enters airways.

**Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

Based on physical properties, not likely to be an aspiration hazard.

**Chronic toxicity (represents longer term exposures with repeated dose resulting in chronic/delayed effects - no immediate effects known unless otherwise noted)****Specific Target Organ Systemic Toxicity (Repeated Exposure)**

Contains component(s) which have been reported to cause effects on the following organs in animals:

Central nervous system.

Kidney.

Liver.

Respiratory tract.

Bladder

Contains an additional component(s) that is not expected to be bioavailable due to the physical state of the material under normal handling and processing conditions.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

No relevant data found.

**Methyltrimethoxysilane**

Based on available data, repeated exposures are not anticipated to cause significant adverse effects.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

In animals, effects have been reported on the following organs:  
Respiratory tract.

**Bis(trimethoxysilyl)hexane**

In animals, effects have been reported on the following organs:  
Bladder

**3-aminopropyltriethoxysilane**

In animals, effects have been reported on the following organs:  
Liver.

**methanol**

Methanol is highly toxic to humans and may cause central nervous system effects, visual disturbances up to blindness, metabolic acidosis, and degenerative damage to other organs including liver, kidney, and heart.

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy(dimethyl)stannane**

In animals, effects have been reported on the following organs:  
Blood  
Kidney  
Liver  
Immune system.

**Carcinogenicity**

Contains a component(s) that is/are not expected to be bioavailable due to the physical state of the material under normal handling and processing conditions.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

No relevant data found.

**Methyltrimethoxysilane**

No relevant data found.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

No relevant data found.

**Bis(trimethoxysilyl)hexane**

No relevant data found.

**3-aminopropyltriethoxysilane**

Did not cause cancer in laboratory animals.

**methanol**

Did not cause cancer in laboratory animals.

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy(dimethyl)stannane**

No relevant data found.

**Teratogenicity**

Contains component(s) which did not cause birth defects or any other fetal effects in lab animals.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

No relevant data found.

**Methyltrimethoxysilane**

Did not cause birth defects or any other fetal effects in laboratory animals.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

Did not cause birth defects in laboratory animals.

**Bis(trimethoxysilyl)hexane**

Did not cause birth defects or any other fetal effects in laboratory animals.

**3-aminopropyltriethoxysilane**

Did not cause birth defects or other effects in the fetus even at doses which caused toxic effects in the mother.

**methanol**

Methanol has caused birth defects in mice at doses nontoxic to the mother as well as slight behavioral effects in offspring of rats.

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy(dimethyl)stannane**

No relevant data found.

**Reproductive toxicity**

Contains component(s) which did not interfere with reproduction in animal studies.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

No relevant data found.

**Methyltrimethoxysilane**

In animal studies, did not interfere with reproduction.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

In animal studies, did not interfere with reproduction.

**Bis(trimethoxysilyl)hexane**

In animal studies, did not interfere with fertility.

**3-aminopropyltriethoxysilane**

In animal studies, did not interfere with fertility.

**methanol**

In animal studies, did not interfere with reproduction.

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

No relevant data found.

**Mutagenicity**

Contains component(s) which were negative in some animal genetic toxicity studies and positive in others. Positive findings were observed only at doses which produced significant inflammation. Contains component(s) which were positive in in vitro genetic toxicity studies.

**Information for components:****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

In vitro genetic toxicity studies were positive.

**Methyltrimethoxysilane**

In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**Bis(trimethoxysilyl)hexane**

In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

**3-aminopropyltriethoxysilane**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative.

**methanol**

In vitro genetic toxicity studies were negative. Animal genetic toxicity studies were negative in some cases and positive in other cases.

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

In vitro genetic toxicity studies were negative in some cases and positive in other cases. Animal genetic toxicity studies were negative.

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**SECTION 12: ECOLOGICAL INFORMATION**

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*Ecotoxicological information appears in this section when such data is available.*

## 12.1 Toxicity

### Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane

#### **Acute toxicity to fish**

No relevant data found.

### Methyltrimethoxysilane

#### **Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, > 110 mg/l, OECD Test Guideline 203 or Equivalent

#### **Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), flow-through test, 48 Hour, > 122 mg/l, OECD Test Guideline 202

#### **Acute toxicity to algae/aquatic plants**

ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, > 3,6 mg/l, OECD Test Guideline 201

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, >= 3,6 mg/l, OECD Test Guideline 201

#### **Toxicity to bacteria**

EC10, activated sludge, 3 Hour, Respiration rates., > 100 mg/l, OECD Test Guideline 209

#### **Chronic toxicity to aquatic invertebrates**

NOEC, Daphnia magna (Water flea), 28 d, number of offspring, >= 10 mg/l

### N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine

#### **Acute toxicity to fish**

Material is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested).

For the hydrolysis product(s)

LC50, zebra fish (Brachydanio rerio), 96 Hour, 597 mg/l

#### **Acute toxicity to aquatic invertebrates**

For the hydrolysis product(s)

EC50, Daphnia magna (Water flea), 48 Hour, 81 mg/l

#### **Acute toxicity to algae/aquatic plants**

For the hydrolysis product(s)

ErC50, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 8,8 mg/l

For the hydrolysis product(s)

NOEC, Pseudokirchneriella subcapitata (green algae), 72 Hour, Growth rate inhibition, 3,1 mg/l

#### **Toxicity to bacteria**

For the hydrolysis product(s)

EC50, Pseudomonas putida, 16 Hour, Growth inhibition, 67 mg/l

**Chronic toxicity to aquatic invertebrates**

For the hydrolysis product(s)

NOEC, Daphnia magna (Water flea), semi-static test, 21 d, number of offspring, > 1 mg/l

**Toxicity to Above Ground Organisms**

Material is moderately toxic to birds on an acute basis (LD50 between 51 and 500 mg/kg).

**Toxicity to soil-dwelling organisms**

NOEC, Eisenia fetida (earthworms), 14 d, >= 1 000 mg/kg

**Bis(trimethoxysilyl)hexane****Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, Oncorhynchus mykiss (rainbow trout), 96 Hour, > 100 mg/l

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), 48 Hour, > 100 mg/l

**Acute toxicity to algae/aquatic plants**

EC50, Selenastrum capricornutum (green algae), 72 Hour, > 100 mg/l

**3-aminopropyltriethoxysilane****Acute toxicity to fish**

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, Danio rerio (zebra fish), semi-static test, 96 Hour, > 934 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna (Water flea), static test, 48 Hour, 331 mg/l, OECD Test Guideline 202 or Equivalent

**Acute toxicity to algae/aquatic plants**

ErC50, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, > 1 000 mg/l

NOEC, Desmodesmus subspicatus (green algae), static test, 72 Hour, Growth rate inhibition, 1,3 mg/l

**Toxicity to bacteria**

EC50, Pseudomonas putida, 5,75 Hour, Respiration rates., 43 mg/l

**methanol****Acute toxicity to fish**

Material is practically non-toxic to aquatic organisms on an acute basis (LC50/EC50/EL50/LL50 >100 mg/L in the most sensitive species tested).

Material is not classified as dangerous to aquatic organisms (LC50/EC50/IC50/LL50/EL50 greater than 100 mg/L in most sensitive species).

LC50, Bluegill sunfish (Lepomis macrochirus), flow-through test, 96 Hour, 15 400 mg/l

**Acute toxicity to aquatic invertebrates**

LC50, Daphnia magna (Water flea), 48 Hour, > 10 000 mg/l



**Acute toxicity to algae/aquatic plants**

ErC50, Pseudokirchneriella subcapitata (green algae), 96 Hour, Growth rate, 22 000 mg/l, OECD Test Guideline 201 or Equivalent

**Toxicity to bacteria**

IC50, activated sludge, 3 Hour, Respiration rates., > 1 000 mg/l, OECD Test Guideline 209

**Chronic toxicity to fish**

NOEC, Oryzias latipes (Orange-red killifish), 200 Hour, 15 800 mg/l

**Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane****Acute toxicity to fish**

Material is harmful to aquatic organisms (LC50/EC50/IC50 between 10 and 100 mg/L in the most sensitive species).

For similar material(s):

LC50, Zebra fish (Danio/Brachydanio rerio), semi-static test, 96 Hour, > 100 mg/l, OECD Test Guideline 203 or Equivalent

**Acute toxicity to aquatic invertebrates**

EC50, Daphnia magna, static test, 48 Hour, 39 mg/l, OECD Test Guideline 202 or Equivalent

**Acute toxicity to algae/aquatic plants**

ErC50, Algae (Scenedesmus subspicatus), Growth rate, 72 Hour, Growth rate, 7,6 mg/l, OECD Test Guideline 201 or Equivalent

For similar material(s):

NOEC, Algae (Scenedesmus subspicatus), Growth rate, 72 Hour, Growth rate, 1,1 mg/l, OECD Test Guideline 201 or Equivalent

**Toxicity to bacteria**

For similar material(s):

EC50, Bacteria, 3 Hour, Respiration rates., 14 mg/l

**12.2 Persistence and degradability****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

**Biodegradability:** 10-day Window: Fail

**Biodegradation:** 41,3 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301B

Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

**Methyltrimethoxysilane**

**Biodegradability:** Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

**Biodegradation:** 54 %

**Exposure time:** 28 d

**Method:** Regulation (EC) No. 440/2008, Annex, C.4-A

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

**Biodegradability:** Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Fail

**Biodegradation:** 39 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301A or Equivalent

**Bis(trimethoxysilyl)hexane**

**Biodegradability:** Material is expected to be readily biodegradable.

10-day Window: Fail

**Biodegradation:** 74 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301B

**Stability in Water (1/2-life)**

Hydrolyses readily., Hydrolysis, DT50, 5,2 Hour, pH 7

**3-aminopropyltriethoxysilane**

**Biodegradability:** Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however, these results do not necessarily mean that the material is not biodegradable under environmental conditions.

10-day Window: Fail

**Biodegradation:** 67 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301A or Equivalent

**Stability in Water (1/2-life)**

Hydrolysis, half-life, 8,5 Hour, pH 7, Half-life Temperature 24,7 °C

**methanol**

**Biodegradability:** Material is readily biodegradable. Passes OECD test(s) for ready biodegradability.

**Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

**Biodegradability:** For similar material(s): Material is expected to biodegrade very slowly (in the environment). Fails to pass OECD/EEC tests for ready biodegradability.

For similar material(s): 10-day Window: Fail

**Biodegradation:** 3 %

**Exposure time:** 28 d

**Method:** OECD Test Guideline 301F or Equivalent

**12.3 Bioaccumulative potential****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

**Bioaccumulation:** No relevant data found.

**Methyltrimethoxysilane**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** -0,82 Estimated.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** < 3 estimated

**Bis(trimethoxysilyl)hexane**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 1,7 Estimated by Structure-Activity Relationship (SAR).

**3-aminopropyltriethoxysilane**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** 1,7 at 20 °C Calculated.

**Bioconcentration factor (BCF):** 3,4 Cyprinus carpio (Carp) 56 d

**methanol**

**Bioaccumulation:** Bioconcentration potential is low (BCF < 100 or Log Pow < 3).

**Partition coefficient: n-octanol/water(log Pow):** -0,77 Measured

**Bioconcentration factor (BCF):** < 10 Leuciscus idus (Golden orfe) Measured

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

**Bioaccumulation:** No relevant data found.

**12.4 Mobility in soil****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

No relevant data found.

**Methyltrimethoxysilane**

No relevant data found.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

Expected to be relatively immobile in soil (Koc > 5000).

Given its very low Henry's constant, volatilization from natural bodies of water or moist soil is not expected to be an important fate process.

**Partition coefficient (Koc):** > 5000 Estimated.

**Bis(trimethoxysilyl)hexane**

No relevant data found.

**3-aminopropyltriethoxysilane**

No relevant data found.

**methanol**

Potential for mobility in soil is very high (Koc between 0 and 50).

**Partition coefficient (Koc):** 0,44 Estimated.

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane**

No relevant data found.

**12.5 Results of PBT and vPvB assessment**

**Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**Methyltrimethoxysilane**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Bis(trimethoxysilyl)hexane**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**3-aminopropyltriethoxysilane**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**methanol**

This substance is not considered to be persistent, bioaccumulating and toxic (PBT). This substance is not considered to be very persistent and very bioaccumulating (vPvB).

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy(dimethyl)stannane**

This substance has not been assessed for persistence, bioaccumulation and toxicity (PBT).

**12.6 Other adverse effects****Aminopropyltriethoxysilane Rxn with Glycidoxypropyltrimethoxysilane and Methyltrimethoxysilane**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Methyltrimethoxysilane**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**N-(3-(Trimethoxysilyl) propyl)-1,2-ethanediamine**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Bis(trimethoxysilyl)hexane**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**3-aminopropyltriethoxysilane**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**methanol**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

**Bis(2-ethyl-2,5-dimethylhexanoyl)oxy(dimethyl)stannane**

This substance is not on the Montreal Protocol list of substances that deplete the ozone layer.

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**SECTION 13: DISPOSAL CONSIDERATIONS**

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**13.1 Waste treatment methods**

Do not dump into any sewers, on the ground, or into any body of water. This product, when being disposed of in its unused and uncontaminated state should be treated as a hazardous waste according to EC Directive 2008/98/EC. Any disposal practices must be in compliance with all national and provincial laws and any municipal or local by-laws governing hazardous waste. For used, contaminated and residual materials additional evaluations may be required.

The definitive assignment of this material to the appropriate EWC group and thus its proper EWC code will depend on the use that is made of this material. Contact the authorized waste disposal services.

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**SECTION 14: TRANSPORT INFORMATION**

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**Classification for ROAD and Rail transport (ADR/RID):**

- |                                   |   |
|-----------------------------------|---|
| 14.1 UN number                    | UN 1993   |
| 14.2 UN proper shipping name      | FLAMMABLE LIQUID, N.O.S.(Methyltrimethoxysilane)                  |
| 14.3 Transport hazard class(es)   | 3   |
| 14.4 Packing group                | III   |
| 14.5 Environmental hazards        | Not considered environmentally hazardous based on available data. |
| 14.6 Special precautions for user | Hazard Identification Number: 30                                  |

**Classification for SEA transport (IMO-IMDG):**

- |   |   |
|---|---|
| 14.1 UN number  | UN 1993   |
| 14.2 UN proper shipping name  | FLAMMABLE LIQUID, N.O.S.(Methyltrimethoxysilane)            |
| 14.3 Transport hazard class(es)   | 3   |
| 14.4 Packing group  | III   |
| 14.5 Environmental hazards  | Not considered as marine pollutant based on available data. |
| 14.6 Special precautions for user   | EmS: F-E, S-E   |
| 14.7 Transport in bulk according to Annex I or II of MARPOL 73/78 and the IBC or IGC Code | Consult IMO regulations before transporting ocean bulk      |

**Classification for AIR transport (IATA/ICAO):**

- |                                   |  |
|-----------------------------------|--|
| 14.1 UN number                    | UN 1993  |
| 14.2 UN proper shipping name      | Flammable liquid, n.o.s.(Methyltrimethoxysilane) |
| 14.3 Transport hazard class(es)   | 3  |
| 14.4 Packing group                | III  |
| 14.5 Environmental hazards        | Not applicable                                   |
| 14.6 Special precautions for user | No data available.                               |

This information is not intended to convey all specific regulatory or operational requirements/information relating to this product. Transportation classifications may vary by container volume and may be influenced by regional or country variations in regulations. Additional transportation system information can be obtained through an authorized sales or customer service representative. It is the responsibility of the transporting organization to follow all applicable laws, regulations and rules relating to the transportation of the material.

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## SECTION 15: REGULATORY INFORMATION

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### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

#### REACH Regulation (EC) No 1907/2006

This product contains only components that have been either registered, are exempt from registration, are regarded as registered or are not subject to registration according to Regulation (EC) No. 1907/2006 (REACH). The aforementioned indications of the REACH registration status are provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. It is the buyer's/user's responsibility to ensure that his/her understanding of the regulatory status of this product is correct.

**REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)**

Conditions of restriction for the following entries should be considered:  
Number on list 3

methanol (Number on list 69)  
Bis[(2-ethyl-2,5-dimethylhexanoyl)oxy](dimethyl)stannane (Number on list 20)

#### Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

Listed in Regulation: FLAMMABLE LIQUIDS

Number in Regulation: P5c

5 000 t

50 000 t

#### Further information

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

#### 15.2 Chemical safety assessment

No Chemical Safety Assessment has been carried out for this substance/mixture.

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## SECTION 16: OTHER INFORMATION

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### Full text of H-Statements referred to under sections 2 and 3.

H225	Highly flammable liquid and vapour.
H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H370	Causes damage to organs if swallowed.
H372	Causes damage to organs through prolonged or repeated exposure if swallowed.
H373	May cause damage to organs through prolonged or repeated exposure if inhaled.
H412	Harmful to aquatic life with long lasting effects.

### Classification and procedure used to derive the classification for mixtures according to Regulation (EC) No 1272/2008

Flam. Liq. - 3 - H226 - Based on product data or assessment

Skin Irrit. - 2 - H315 - Calculation method

Eye Dam. - 1 - H318 - Calculation method

Skin Sens. - 1 - H317 - Calculation method

STOT RE - 2 - H373 - Calculation method

### Revision

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Most recent revision(s) are noted by the bold, double bars in left-hand margin throughout this document.

### Legend

2006/15/EC	Europe. Indicative occupational exposure limit values
ACGIH	USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI	ACGIH - Biological Exposure Indices (BEI)
Dow IHG	Dow Industrial Hygiene Guideline
ES VLA	Spain. Environmental Limits for exposure to Chemical agents - Table 1: Occupational Exposure Values
ES VLB	Occupational Exposure Limits for Chemical Agents in Spain - Biological Exposure Values
STEL	Short-term exposure limit
TWA	Time weighted average
VLA-EC	Environmental Short Term Value
VLA-ED	Environmental Daily Limit Value
Acute Tox.	Acute toxicity
Aquatic Chronic	Long-term (chronic) aquatic hazard

Eye Dam.	Serious eye damage
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquids
Skin Corr.	Skin corrosion
Skin Irrit.	Skin irritation
Skin Sens.	Skin sensitisation
STOT RE	Specific target organ toxicity - repeated exposure
STOT SE	Specific target organ toxicity - single exposure

### Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road; AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

### Information Source and References

This SDS is prepared by Product Regulatory Services and Hazard Communications Groups from information supplied by internal references within our company.

DOW CHEMICAL IBERICA S.L. urges each customer or recipient of this (M)SDS to study it carefully and consult appropriate expertise, as necessary or appropriate, to become aware of and understand the data contained in this (M)SDS and any hazards associated with the product. The information herein is provided in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ between various locations. It is the buyer's/user's responsibility to ensure that his



activities comply with all federal, state, provincial or local laws. The information presented here pertains only to the product as shipped. Since conditions for use of the product are not under the control of the manufacturer, it is the buyer's/user's duty to determine the conditions necessary for the safe use of this product. Due to the proliferation of sources for information such as manufacturer-specific (M)SDSs, we are not and cannot be responsible for (M)SDSs obtained from any source other than ourselves. If you have obtained an (M)SDS from another source or if you are not sure that the (M)SDS you have is current, please contact us for the most current version.  
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