SAFETY DATA SHEET According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

Material: 60008933 **WACKER® CATALYST T 77**

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

1.1 Product identifier

Commercial product name: **WACKER® CATALYST T 77**

This substance/ mixture contains nanoforms (according to REACH Regulation)

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

Use of substance / preparation:
Industrial. Commercial.
elastomer products .

1.3 Details of the supplier of the safety data sheet

Manufacturer/distributor:	Wacker Chemie AG	
Street/POB-No.:	Gisela-Stein-Straße 1	
State/postal code/city:	D 81671 München	
Telephone:	+49 89 6279-0	
Contact point:	Wacker Chemicals Ltd.	
Street/POB-No.:	2 Arlington Square, Downshire Way	
Postal code/city:	Bracknell RG12 1WA	
Country:	United Kingdom	
Telephone:	+44 1344 401 670	
Information about the Safety Data Sheet:	Telephone	+49 8677 83-4888
	eMail	WLCP-MSDS@wacker.com

1.4 Emergency telephone number

Emergency Information: **+44 1273 289451**

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

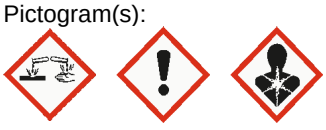
Classification (REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567):

Classification	H-Code
Skin sensitisation, Category 1	H317
Reproductive toxicity, Category 1B	H360F
Reproductive toxicity, Category 1B	H360D
Specific target organ toxicity - repeated exposure, Category 1, by inhalation (larynx, nasopharynx, nasoturbinal tissue)	H372
Long-term (chronic) aquatic hazard, Category 3	H412
Serious eye damage/eye irritation, Category 1	H318
Acute toxicity, Category 4, oral	H302
Specific target organ toxicity - repeated exposure, Category 2, oral (Heart, Liver)	H373

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567):

Pictogram(s):



Signal Word: Danger

H-Code	Hazard Statements
H302	Harmful if swallowed.
H317	May cause an allergic skin reaction.

H318	Causes serious eye damage.
H360FD	May damage fertility. May damage the unborn child.
H372	Causes damage to organs (larynx, nasopharynx, nasoturbinal tissue) through prolonged or repeated exposure if inhaled.
H373	May cause damage to organs (Heart, Liver) through prolonged or repeated exposure if swallowed.
H412	Harmful to aquatic life with long lasting effects.

P-Code	Precautionary Statements
P280	Wear protective gloves/protective clothing/eye protection.
P273	Avoid release to the environment.
P201	Obtain special instructions before use.
P260	Do not breathe vapours/spray.
P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/ doctor.
P302 + P352	IF ON SKIN: Wash with plenty of soap and water.
P333 + P313	If skin irritation or rash occurs: Get medical advice/ attention.
P304 + P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P330	Rinse mouth.
P405	Store locked up.

Hazard ingredients (labelling):
1,2-Bis(triethoxysilyl)ethane
3-(2-Aminoethylamino)propyl trimethoxysilane
Silicic acid, tetraethyl ester, reaction product with bis(acetyloxy)dibutylstannane

Code	Additional Labelling
	Restricted to professional users.

2.3 Other hazards

The product hydrolyses under formation of methanol (CAS-Nr. 67-56-1). Methanol is classified concerning both physical and health hazards. The hydrolysis rate and consequently the relevance for the hazard profile of the product is strongly dependent on the specific conditions. The product hydrolyses under formation of ethanol (CAS-Nr. 64-17-5). Ethanol is classified concerning both physical and health hazards. The hydrolysis rate and consequently the relevance for the hazard profile of the product is strongly dependent on the specific conditions.
Endocrine disrupting properties - human health: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.
Endocrine disrupting properties - environment: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

not applicable

3.2 Mixtures

3.2.1 Chemical characteristics

Polydimethylsiloxane + auxiliary + silane

3.2.2 Hazardous ingredients

1,2-Bis(triethoxysilyl)ethane			>20 – <25 %
CAS-No.: 16068-37-4		EC-No.: 240-212-2	
INHA	[1]	REACH No.: 01-2120764364-51	
Classification (REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567) *		Acute Tox. 3, oral / H301; STOT RE 2, oral / H373 (Heart, Liver); Acute Tox. 4, dermal / H312; Aquatic Chronic 2 / H411; STOT RE 1, by inhalation / H372 (larynx, nasopharynx, nasoturbinal tissue)	

3-(2-Aminoethylamino)propyl trimethoxysilane			>10 – <15 %
CAS-No.: 1760-24-3		EC-No.: 217-164-6	
INHA	[1]	REACH No.: 01-2119970215-39	
Classification (REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567) *		Eye Dam. 1 / H318; Skin Sens. 1B / H317; STOT SE 3 / H335	

1,1-Bis(triethoxysilyl)ethane			<2 %
CAS-No.: 16068-36-3			
VERU	[1]		
Classification (REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567) *		Acute Tox. 4, dermal / H312; Acute Tox. 3, oral / H301	

Silicic acid, tetraethyl ester, reaction product with bis(acetyloxy)dibutylstannane			>0,3 – <1 %
CAS-No.: 93925-42-9		EC-No.: 300-344-4	
INHA	[1]	REACH No.: 01-2119560586-30	
Classification (REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567) *		STOT SE 1 / H370 (thymus); Muta. 2 / H341; Repr. 1B / H360F; Repr. 1B / H360D; Acute Tox. 4, by inhalation / vapour / H332; Aquatic Chronic 2 / H411; Acute Tox. 4, oral / H302; Eye Dam. 1 / H318; STOT RE 1 / H372 (thymus); Flam. Liq. 3 / H226 specific concentration limit: 2 - < 20 %: STOT SE 2 / H371 >= 20 %: STOT SE 1 / H370 >= 0,6 %: Repr. 1B / H360D >= 0,6 %: Repr. 1B / H360F >= 2 %: Muta. 2 / H341 2 - < 20 %: STOT RE 2 / H373 >= 20 %: STOT RE 1 / H372	

Octamethylcyclotetrasiloxane			>=0,01 – <0,025 %
CAS-No.: 556-67-2		EC-No.: 209-136-7	Index-No.: 014-018-00-1
VERU	[1], [3], [4]		
Classification (REGULATION (EC) No 1272/2008 as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567) *		Repr. 2 / H361f; Aquatic Chronic 1 / H410; Flam. Liq. 3 / H226 M-Factor, Chronic = 10	

Type: INHA: ingredient, VERU: impurity

REACH registered substances may be included as impurities. These do not necessarily require identified uses and exposure scenarios in the safety data sheet.

[1] = Hazardous or environmentally harmful substance; [2] = substance with a Community workplace exposure limit; [3] = PBT substance; [4] = vPvB substance; [5] = Endocrine disrupting properties

*For explanation of abbreviations see section 16.

This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57) in amounts above ≥ 0.1%.

SECTION 4: First aid measures

4.1 Description of first aid measures

General information:
Take persons to a safe place. Observe self-protection for first aid. In the event of allergic reactions, particularly those affecting the respiratory system, seek immediate medical advice.

After contact with the eyes:
Rinse immediately with plenty of water for 10-15 minutes. Keep eyelids well open to rinse the whole eye surface and eyelids with water. Seek medical advice immediately and clearly identify substance. Continue to bathe eyes during transport to medical practitioner.

After contact with the skin:
Remove contaminated or soaked clothing. Wash off with plenty of water or water and soap immediately for 10-15 minutes. In serious cases, use emergency shower immediately. Seek medical advice and clearly identify substance.

After inhalation:
Keep the patient calm. If unconscious place in stable sideways position. Protect against loss of body heat. If breathing stops, administer artificial respiration. Seek medical advice and clearly identify substance.

After swallowing:
If conscious, give several small portions of water to drink. Do not induce vomiting. Seek medical advice and clearly identify substance.

4.2 Most important symptoms and effects, both acute and delayed

Any relevant information can be found in other parts of this section.

4.3 Indication of any immediate medical attention and special treatment needed

Product can lead to sensitisation and can trigger allergies. After inhalation: treat as early as possible using cortisone spray.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media:
water mist , extinguishing powder , alcohol-resistant foam , carbon dioxide , sand .

Extinguishing media which must not be used for safety reasons:
water jet .

5.2 Special hazards arising from the substance or mixture

Risk of hazardous gasses or fumes in the event of fire. Exposure to combustion products may be a health hazard! Hazardous combustion products: toxic and very toxic fumes.

5.3 Advice for firefighters

Special protective equipment for fire fighting:
Use respiratory protection independent of recirculated air. Keep unprotected persons away.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Secure the area. Wear personal protection equipment (see section 8). Keep unprotected persons away. Avoid contact with eyes and skin. Do not inhale gases/vapours/aerosols. If material is released indicate risk of slipping. Do not walk through spilled material.

6.2 Environmental precautions

Prevent material from entering surface waters, drains or sewers and soil. Close leak if possible without risk. Retain contaminated water/extinguishing water. Dispose of in prescribed marked containers. Inform authorities if substance leaks into surface waters, sewerage or ground.

6.3 Methods and material for containment and cleaning up

Scoop up large quantities after dusting surfaces with sand or Fuller's earth to prevent sticking. Sweep or scrape up the spilled material and place in an appropriate chemical waste container. Clean any slippery coating that remains using a detergent / soap solution or another biodegradable cleaner. Apply sand or other inert granular material to improve traction.

Further information:
Exhaust vapours. Eliminate all sources of ignition. Consider explosion protection. Observe notes under section 7.

6.4 Reference to other sections

Relevant information in other sections has to be considered. This applies in particular for information given on personal protective equipment (section 8) and on disposal (section 13).

SECTION 7: Handling and storage

7.1 Precautions for safe handling

General information:

Avoid exposure by technical measures or personal protective equipment.

Precautions for safe handling:
Ensure adequate ventilation. Must be syphoned off in situ. Observe information in section 8. Keep away from incompatible substances in accordance with section 10.

Precautions against fire and explosion:
Flammable vapors may accumulate and form explosive mixtures with air in containers, process vessels, including partial, empty and uncleaned containers and vessels, or other enclosed spaces. Keep away from sources of ignition and do not smoke. Take precautionary measures against electrostatic charging. Cool endangered containers with water. Product can separate ethanol and methanol.

7.2 Conditions for safe storage, including any incompatibilities

Conditions for storage rooms and vessels:
Observe local/state/federal regulations.

Advice for storage of incompatible materials:
Observe local/state/federal regulations.

Further information for storage:
Store in a dry and cool place. Protect against moisture. Store container in a well ventilated place.

7.3 Specific end use(s)

No data available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Maximum airborne concentrations at the workplace:

Substance	Type	mg/m³	ppm	Dust fract.	Fibre/m³
Ethanol	OEL	1920,0	1000,0		
Methanol	OEL	266,0	200,0		
Methanol	EU	260,0	200,0		

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Derived No-Effect Level (DNEL):

3-(2-Aminoethylamino)propyl trimethoxysilane

Area of use:	Value:
Worker; by inhalation; systemic (long term)	35,5 mg/m³
Worker; dermal; systemic (long term) systemic (acute)	5 mg/kg/day
Consumer; oral; systemic (long term)	2,5 mg/kg/day
Consumer; by inhalation; systemic (long term)	8,7 mg/m³
Consumer; dermal; systemic (long term)	2,5 mg/kg/day

1,2-Bis(triethoxysilyl)ethane

Area of use:	Value:
Worker; by inhalation; local (long term)	0,006 mg/m³
Consumer; by inhalation; local (long term)	0,001 mg/m³

Predicted No Effect Concentration (PNEC):

3-(2-Aminoethylamino)propyl trimethoxysilane

Area of use:	Value:
freshwater	0,062 mg/l
marine water	0,0062 mg/l
Intermittent release	0,62 mg/l
Sediment (freshwater)	0,05 mg/kg wet weight The value was derived for the corresponding silanetriol (hydrolysis product).
Sediment (marine water)	0,005 mg/kg wet weight The value was derived for the corresponding silanetriol (hydrolysis product).
Soil	0,0075 mg/kg wet weight The value was derived for the corresponding silanetriol (hydrolysis product).
sewage treatment plant	25 mg/l

1,2-Bis(triethoxysilyl)ethane

Area of use:	Value:
freshwater	0,016 mg/l
marine water	0,002 mg/l
Sediment (freshwater)	0,078 mg/kg dry mass
Sediment (marine water)	0,008 mg/kg dry mass
sewage treatment plant	8000 mg/l
Soil	0,006 mg/kg dry mass
Secondary poisoning	not of relevance
Intermittent release	0,016 mg/l

8.2 Exposure controls

8.2.1 Exposure in the work place limited and controlled

General protection and hygiene measures:
Avoid exposure - obtain special instructions before use. Avoid exposure of the substance to pregnant women. Observe standard industrial hygiene practices for the handling of chemical substances. Do not inhale gases/vapours/aerosols. Use with adequate ventilation. Do not eat, drink or smoke when handling. Keep away from foodstuff, drink and feedingstuff. Avoid contact with eyes and skin. Preventive skin protection recommended. Remove contaminated, soaked clothing immediately. Clean work areas regularly. Provide emergency shower and eye-bath. Wash hands at the end of work and before eating. Keep working clothes separately.

Further information for system design and engineering measures

Observe information in section 7. Observe national regulatory requirements.

Personal protection equipment:

Respiratory protection

If inhalative exposure above the occupational exposure limit cannot be excluded, adequate respiratory protection equipment must be used. Suitable respiratory equipment: Respirator with a full face mask, according to acknowledged standards such as EN 136. Recommended Filter type: Gas filter type ABEK (certain inorganic, organic and acidic gases and vapors; ammonia/amines), according to acknowledged standards such as EN 14387

Observe the equipment manufacturer's information and wear time limits for respirators.

Eye protection

tight fitting protective goggles, according to acknowledged standards such as EN 166.

Hand protection

Protective gloves are required at all times when handling the material, according to recognized standards such as EN374.

Recommended glove types: Protective gloves made of butyl rubber
thickness of the material: > 0,3 mm
Breakthrough time: > 480 min

Recommended glove types: Protective gloves made of nitrile rubber
thickness of the material: > 0,4 mm
Breakthrough time: 10 - 30 min

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Note that, due to the numerous external influences (such as temperature), a chemically resistant protective glove in daily use may have a service life that is considerably shorter than the measured break through time.

Skin protection

protective clothing, according to acknowledged standards such as EN 13034.

8.2.2 Exposure to the environment limited and controlled

Prevent material from entering surface waters, drains or sewers and soil. Observe local waste water bye-laws for organo tin and tin compounds. Do not introduce large amounts into purification plants.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Property:	Value:	Method:
Physical state	liquid	
Form	paste	
Colour	black	
Odour	faint	
Odour Threshold	no data available	
Melting point	exempt	
Boiling point/boiling range	not applicable	
Lower explosion limit	not applicable	
Upper explosion limit	not applicable	
Flash point	61 °C	(ISO 3679)
Ignition temperature	374 °C	(EN 14522)
Thermal decomposition	no data available	
pH	Not applicable. Reacts with water.	
Viscosity, kinematic	no data available	
Viscosity, dynamic	130000 mPa.s at 25 °C shear rate: 0,5 1/S	(DIN EN ISO 3219)
Viscosity, dynamic	8000 mPa.s at 25 °C shear rate: 25 1/S	(DIN EN ISO 3219)
Water solubility	insoluble	
Partition coefficient: n-octanol/water	not applicable	
Vapour pressure	not determined	
Density	1,01 g/cm³ (23 °C)	(ISO 1183-1 A)

Relative vapour density ..... : no data available
Particle Size Distribution ..... : Not applicable.

9.2 Other information

Solubility in water: Hydrolytic decomposition occurs. Hydrolysis products reduce the flash point. Explosion Limits: Explosion limits for released ethanol: 3.5 - 15%(V). Explosion limits for released methanol: 5.5 - 44%(V).

Property:	Value:	Method:
Sustained combustibility ..... :	> 110 °C	(ISO 9038)
Evaporation rate ..... :	no data available	
Molecular weight ..... :	not applicable	

SECTION 10: Stability and reactivity

10.1 – 10.3 Reactivity; Chemical stability; Possibility of hazardous reactions

If stored and handled in accordance with standard industrial practices no hazardous reactions are known.

Relevant information can possibly be found in other parts of this section.

10.4 Conditions to avoid

Moisture, heat, open flames, and other sources of ignition.

10.5 Incompatible materials

Reacts with: water , basic substances and acids . The reaction takes place with the formation of ethanol and methanol.

10.6 Hazardous decomposition products

If stored and handled properly: none known. Ethanol and methanol by hydrolysis. Measurements have shown the formation of small amounts of formaldehyde at temperatures above about 150 °C (302 °F) through oxidation.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

11.1.1 General information

Data derived for the product as a whole are of higher priority than data for single ingredients.

11.1.2 Acute toxicity

Assessment:

For this endpoint no toxicological test data is available for the whole product.

Acute toxicity estimate (ATE):
ATE_{mix} (Oral): 622 mg/kg
ATE_{mix} (dermal): > 2000 mg/kg

Data on substances:

3-(2-Aminoethylamino)propyl trimethoxysilane:

This product is placed on the market in a form for which the aerosol specific toxicity after aerosol exposure of animals has no relevance for the hazard assessment (4h-LC50: 1.49 – 2.44 mg/l).

Exposure routes	Result/Effect
Oral	LD50 2295 mg/kg Species: Rat, Sex: male and female, Source: test report
dermal	LD50 > 2000 mg/kg Neither mortality nor clinical signs of toxicity were observed with the given dose. Species: Rabbit, Sex: male and female, Source: test report

1,2-Bis(triethoxysilyl)ethane:

Exposure routes	Result/Effect
Oral	LD50 161 mg/kg Species: Rat, Sex: male and female, Method: OECD 401, Source: test report
dermal	LD50 1972 mg/kg Species: Rat, Sex: male and female, Method: OECD 402, Source: test report
by inhalation (vapour)	LC50 > 0,38 mg/l; 4 h No mortality at room temperature in highly enriched or saturated atmosphere. Species: Rat, Sex: male and female, Method: OECD 403, Source: test report

11.1.3 Skin corrosion/irritation

Assessment:

For this endpoint no toxicological test data is available for the whole product.

Data on substances:

3-(2-Aminoethylamino)propyl trimethoxysilane:

mildly irritating
(Species: Rabbit, Method: OECD 404, Source: test report)

1,2-Bis(triethoxysilyl)ethane:

No skin irritation
(Species: Rabbit, Test system: semi-occlusive, Method: OECD 404, Source: test report)

11.1.4 Serious eye damage/eye irritation

Assessment:

For this endpoint no toxicological test data is available for the whole product.

Data on substances:

3-(2-Aminoethylamino)propyl trimethoxysilane:

serious damages to eyes
(Species: Rabbit, Method: OECD 405, Source: test report)

1,2-Bis(triethoxysilyl)ethane:

No eye irritation
(Species: Rabbit, Method: OECD 405, Source: test report)

11.1.5 Respiratory or skin sensitization

Assessment:

For this endpoint no toxicological test data is available for the whole product.

Data on substances:

3-(2-Aminoethylamino)propyl trimethoxysilane:

After contact to the skin a skin sensitization is possible. The product is a skin sensitiser, sub-category 1B.

Exposure routes	Result
Skin contact	Sensitising (Species: Guinea pig, Test system: Maximisation Test, Method: OECD 406, Source: test report)
Skin contact	Sensitising (Species: Mouse, Test system: Local lymph node assay (LLNA), Method: OECD 429, Source: test report)

1,2-Bis(triethoxysilyl)ethane:

Exposure routes	Result
Skin contact	Does not cause skin sensitization. (Species: Guinea pig, Test system: Maximisation Test, Method: OECD 406, Source: test report)

11.1.6 Germ cell mutagenicity

Assessment:

For this endpoint no toxicological test data is available for the whole product.

Data on substances:

3-(2-Aminoethylamino)propyl trimethoxysilane:

Based on known data a significant mutagenic potential may be excluded.

negative (Metabolic activation: with and without metabolic activation, Test system: mutation assay (in vitro) / bacterial cells, Method: OECD 471, Source: test report)
negative (Metabolic activation: with and without metabolic activation, Test system: mutation assay (in vitro) / mammalian cells, Method: OECD 476, Source: test report)
negative (Metabolic activation: with and without metabolic activation, Test system: Assay for sister chromatid exchange (in vitro) / mammalian cells, Source: test report)
negative (Test system: micro nucleus assay (in vivo), Species: Mouse, Strain: Swiss Webster, Sex: male and female, Application Route: Intraperitoneal, Cell type: erythrocytes, Method: OECD 474, Source: test report)

1,2-Bis(triethoxysilyl)ethane:

Based on the available data the criteria for classification as germ cell mutagen are not fulfilled.

negative (Metabolic activation: with and without metabolic activation, Test system: mutation assay (in vitro) / bacterial cells, Method: OECD 471, Source: test report)
positive (Metabolic activation: with metabolic activation, Test system: mutation assay (in vitro) / mouse lymphoma cells, Method: OECD 476, Source: test report)
negative (Metabolic activation: with and without metabolic activation, Test system: chromosome aberration assay (in vitro) / mammalian cells, Method: OECD 473, Source: test report)
negative (Test system: micro nucleus assay (in vivo), Species: Mouse, Strain: ICR, Sex: male and female, Application Route: Oral, Cell type: bone marrow cells, Method: OECD 474, Source: test report)
negative (Test system: Comet assay, Species: Rat, Strain: wistar, Sex: male and female, Application Route: Oral, Method: OECD 489, Source: test report)

11.1.7 Carcinogenicity

Assessment:

For this endpoint no toxicological test data is available for the whole product.

Data on substances:

3-(2-Aminoethylamino)propyl trimethoxysilane:

No data known.

11.1.8 Reproductive toxicity

Assessment:

For this endpoint no toxicological test data is available for the whole product.

Data on substances

3-(2-Aminoethylamino)propyl trimethoxysilane:

Based on the available data the criteria for classification as toxic to reproduction are not fulfilled.

Reproductive Toxicity/Fertility
NOAEL: >= 500 mg/kg (Test system: screening test, Species: Rat, Strain: Sprague-Dawley, Sex: male and female, Application Route: Oral, Route of administration: gavage, Frequency of Treatment: 7 d/w, Method: OECD 422, Source: test report)

Reproductive Toxicity/Development/Teratogenicity
NOAEL (developmental): >= 500 mg/kg NOAEL (maternal): >= 500 mg/kg (Test system: screening test, Species: Rat, Strain: Sprague-Dawley, Application Route: Oral, Route of administration: gavage, Frequency of Treatment: 7 d/w, Method: OECD 422, Source: test report)

1,2-Bis(triethoxysilyl)ethane:

Based on the available data the criteria for classification as toxic to reproduction are not fulfilled.

Reproductive Toxicity/Development/Teratogenicity
NOAEL (developmental): >= 40 mg/kg NOAEL (maternal): >= 40 mg/kg (Test system: Developmental Toxicity Study, Species: Rat, Strain: wistar, Sex: female, Application Route: Oral, Route of administration: gavage, Frequency of Treatment: day 6 - 20 of gestation, Method: OECD 414, Source: test report)

11.1.9 Specific target organ toxicity - single exposure

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.1.10 Specific target organ toxicity - repeated exposure

Assessment:

For this endpoint no toxicological test data is available for the whole product.

Data on substances:

3-(2-Aminoethylamino)propyl trimethoxysilane:

Based on the available data the criteria for classification as toxic after repeated exposure are not fulfilled.

Result/Effect
NOAEL: >= 500 mg/kg (Symptoms/Effect: Nothing abnormal detected., Test system: Subacute study, Species: Rat, Sex: male and female, Application Route: Oral, Route of administration: gavage, Test period: 28 d, Method: OECD 422, Source: test report)

1,2-Bis(triethoxysilyl)ethane:

Causes damage to organs through repeated or prolonged exposure after inhalative exposure. May cause damage to organs through repeated or prolonged exposure. No systemic toxicity.

Result/Effect
LOAEC: 0,0027 mg/l A NOAEL was not identified. (target organs: nasal mucous membrane, olfactory mucosa, Test system: Subacute study, Species: Rat, Sex: male and female, Application Route: by inhalation, Route of administration: vapour, Test period: 28 d, Frequency of Treatment: 5 d/w, hours/day: 6, Method: OECD 412, Source: test report)
NOAEL: 10 mg/kg LOAEL: 20 mg/kg (target organs: Heart, Liver, Test system: Subchronic study, Species: Rat, Sex: male and female, Application Route: Oral, Route of administration: gavage, Test period: 90 d, Frequency of Treatment: 7 d/w, Method: OECD 408, Source: test report)

11.1.11 Aspiration hazard

Assessment:

For this endpoint no toxicological test data is available for the whole product.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Data on substances:

1,2-Bis(triethoxysilyl)ethane:

No data available.

3-(2-Aminoethylamino)propyl trimethoxysilane:

No data available.

11.2.2 Further toxicological information

None known.

Data on substances:

Product of hydrolysis (Methanol):

Methanol (CAS 67-56-1) is readily and rapidly absorbed at all exposure routes and is toxic by all routes. Methanol may cause irritation of the mucosa, as well as nausea, vomiting, headaches, vertigo and visual disorders, including blindness (irreversible damage to the optic nerve), acidosis, spasms, narcosis and coma. There may be a delay in the onset of these effects after exposure.

SECTION 12: Ecological information

12.1 Toxicity

Assessment:

For the product as a whole, no test data is available. D4 is an unavoidable contamination in the manufacture of silicone polymers and leads to adverse effects on aquatic organisms under laboratory conditions. The release of D4 from a polysiloxane matrix is limited thermodynamically by the partition equilibrium silicone/water. Thus, only that portion of the D4 content that gets into the aqueous phase contributes to the environmental hazard of the overall product. For the classification according to the summation method this is being considered applying correction factors.

Data on substances:

Data derived for the product as a whole are of higher priority than data for single ingredients.

1,2-Bis(triethoxysilyl)ethane:

Result/Effect	Species/Test system	Source
LC50: 16 mg/l (nominal)	semi-static test Danio rerio (zebra fish) (96 h)	test report OECD 203
EC50: 72,6 mg/l (nominal)	semi-static test Daphnia magna (Water flea) (48 h)	test report OECD 202
ErC50: > 100 mg/l (nominal)	static test Pseudokirchneriella subcapitata (green algae) (72 h)	test report OECD 201
NOEC (Growth rate): 50 mg/l (nominal)	static test Pseudokirchneriella subcapitata (green algae) (72 h)	test report OECD 201
EC50 (Growth inhibition): > 8000 mg/l (nominal)	static test Pseudomonas putida (16 h)	test report DIN 38412, part 8
LOEC (Growth): 0,071 mg/l (measured)	flow-through test Danio rerio (zebra fish) (35 d)	test report OECD 210
NOEC (Growth): 0,033 mg/l (measured)	flow-through test Danio rerio (zebra fish) (35 d)	test report OECD 210
NOEC (relevant parameters): 0,90 mg/l (measured)	flow-through test Daphnia magna (Water flea) (21 d)	test report OECD 211

3-(2-Aminoethylamino)propyl trimethoxysilane:

Toxic to aquatic organisms.

Result/Effect	Species/Test system	Source
LC50: 597 mg/l (measured)	semi-static test Danio rerio (zebra fish) (96 h)	test report
EC50: 81 mg/l (nominal)	static test Daphnia magna (Water flea) (48 h)	test report
ErC50: 8,8 mg/l (nominal)	static test Pseudokirchneriella subcapitata (green algae) (72 h)	test report OECD 201
NOEC (Growth rate): 3,1 mg/l (nominal)	static test Pseudokirchneriella subcapitata (green algae) (72 h)	test report OECD 201
EC50 (Growth inhibition): 67 mg/l	static test Pseudomonas putida (16 h)	test report DIN 38412, part 8
NOEC (Immobilization): > 1 mg/l (nominal)	semi-static test Daphnia magna (Water flea) (21 d)	test report
NOEC (reproduction rate): > 1 mg/l (nominal)	semi-static test Daphnia magna (Water flea) (21 d)	test report
NOEC (mortality): >= 1000 mg/kg	Eisenia fetida (earthworms) (14 d)	test report OECD 207
NOEC (Growth): >= 1000 mg/kg	Eisenia fetida (earthworms) (14 d)	test report OECD 207

12.2 Persistence and degradability

Assessment:

Polymer component: biologically not degradable. Elimination by adsorption to activated sludge.

Data on substances:

Product of hydrolysis (Methanol):

Methanol is readily biodegradable.

Product of hydrolysis (Ethanol):

Ethanol is readily biodegradable.

1,2-Bis(triethoxysilyl)ethane:

Silanol- and/or siloxanol-compounds: Biologically not degradable.

Biodegradation:

Result	Test system/Method	Source
88 % / 28 d Readily biodegradable.	biological oxygen demand (BOD)	test report OECD 301F

Hydrolysis:

Result	Test system	Source
Half-life: 0,8 h	pH 4	test report QSAR
Half-life: 36 h	pH 7	test report QSAR
Half-life: 0,5 h	pH 9	test report QSAR

3-(2-Aminoethylamino)propyl trimethoxysilane:

Contact with water liberates methanol and silanol- and/or siloxanol-compounds. Methanol is readily biodegradable. Silanol- and/or siloxanol-compounds: Biologically not degradable.

Biodegradation:

Result	Test system/Method	Source
39 % / 28 d Not readily biodegradable.	DOC - decrease	test report OECD 301A

Hydrolysis:

Result	Test system	Source
Half-life: 0,025 h	pH 7; 24,7 °C	test report OECD 111

12.3 Bioaccumulative potential

Assessment:

Polymer component: No adverse effects expected.

12.4 Mobility in soil

Assessment:

Polymer component: insoluble in water.

12.5 Results of PBT and vPvB assessment

PBT assessment
No data available.

vPvB Assessment
No data available.

Data on substances:

1,2-Bis(triethoxysilyl)ethane:

PBT assessment
The substance does not fullfill the PBT criteria.

vPvB Assessment
The substance does not fullfill the vPvB criteria.

3-(2-Aminoethylamino)propyl trimethoxysilane:

PBT assessment
The substance does not fullfill the PBT criteria.

vPvB Assessment
The substance does not fullfill the vPvB criteria.

12.6 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Data on substances:

1,2-Bis(triethoxysilyl)ethane:

No data available.

3-(2-Aminoethylamino)propyl trimethoxysilane:

No data available.

12.7 Other adverse effects

none known

SECTION 13: Disposal considerations

13.1 Waste treatment methods

13.1.1 Material

Recommendation:
Material that cannot be used, reprocessed or recycled should be disposed of in accordance with Federal, State, and local regulations at an approved facility. Depending on the regulations, waste treatment methods may include, e.g., landfill or incineration.

13.1.2 Uncleaned packaging

Recommendation:
Completely discharge containers (no tear drops, no powder rest, scraped carefully). Containers may be recycled or re-used. Observe local/state/federal regulations. Uncleaned packaging should be treated with the same precautions as the material.

13.1.3 Waste Disposal Legislation Ref.No.(EC)

It is not possible to determine a waste code for this product in accordance with the European Waste Catalogue (EWC) since it is only possible to classify it according to how it is used by the customer. The waste code is to be determined within the EU in liaison with the waste-disposal operator.

SECTION 14: Transport information

14.1 UN number or ID number

ADR .....: Not applicable
RID.....: Not applicable
IMDG.....: Not applicable
ICAO/IATA .....: Not applicable

14.2 Proper shipping name

ADR .....: Not applicable
RID.....: Not applicable
IMDG.....: Not applicable
ICAO/IATA .....: Not applicable

14.3 Transport hazard class

ADR .....: Not applicable
RID.....: Not applicable
IMDG.....: Not applicable
ICAO/IATA .....: Not applicable

14.4 Packing group

ADR .....: Not applicable
RID.....: Not applicable
IMDG.....: Not applicable
ICAO/IATA .....: Not applicable

14.5 Environmental hazards

Environmentally hazardous: no

14.6 Special precautions for user

Relevant information in other sections has to be considered.

14.7 Maritime transport in bulk according to IMO instruments

Bulk transport in tankers is not intended.

SECTION 15: Regulatory information

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

National and local regulations must be observed.

For information on labelling please refer to section 2 of this document.

Control of Major Accident Hazards Regulations 2015 (COMAH)

Not applicable

Relevant regulations:
SI 2002/1689: CHIP Regulations 2002
SI 2002/2677: COSHH Regulations 2002
SI 1999/3242: Management of Health & Safety at Work Regulations 1999
Health & Safety at Work Act 1974
SI 1993/1643: Environmental Protection Act 1993 & Subsidiary Regulations.
Other national and local measures relating to the workplace, pollution control, environmental protection and waste control.

Other specifications, restrictions and prohibitions:

REACh Annex XVII: This product contains dibutyltin compounds in an amount of over 0.1 wt.%. Annex XVII, entry 20, of regulation 1907/2006, in its current version, must be taken into account.

Regulation (EU) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals: Banned and/or restricted

Regulation (EU) 2019/1148 on the marketing and use of explosives precursors - ANNEX I. RESTRICTED EXPLOSIVES PRECURSORS: Not applicable

Regulation (EU) 2019/1148 on the marketing and use of explosives precursors - ANNEX II. REPORTABLE EXPLOSIVES PRECURSORS: Not applicable

REACh Annex XVII: Due to the numbers 28 to 30, the product is not intended for sale to the general public.

Details of international registration status

Relevant information about individual substance inventories, where available, is given below.

Japan ..... : **ENCS** (Handbook of Existing and New Chemical Substances):
This product is listed in, or complies with, the substance inventory.

Australia	:	**AIIC** (Australian Inventory of Industrial Chemicals): This product is listed in, or complies with, the substance inventory.
China	:	**IECSC** (Inventory of Existing Chemical Substances in China): This product is listed in, or complies with, the substance inventory.
Philippines	:	**PICCS** (Philippine Inventory of Chemicals and Chemical Substances): This product is listed in, or complies with, the substance inventory.
United States of America (USA)	:	**TSCA** (Toxic Substance Control Act Chemical Substance Inventory): All components of this product are listed as active or are in compliance with the substance inventory.
Taiwan	:	**TCSI** (Taiwan Chemical Substance Inventory): This product is listed in, or complies with, the substance inventory. General note: The Taiwanese chemicals regulation requires a phase 1 registration for TCSI-listed or TCSI-compliant substances if imports to Taiwan or manufacturing in Taiwan exceed the trigger quantity of 100 kg/a (for mixtures to be calculated per each ingredient). It is the duty of the importing/manufacturing legal entity to take care of this obligation.
European Economic Area (EEA)	:	**REACH** (Regulation (EC) No 1907/2006): General note: the registration obligations for substances imported into the EEA or manufactured within the EEA by the supplier mentioned in section 1 are fulfilled by the said supplier. The registration obligations for substances imported into the EEA by customers or other downstream users must be fulfilled by the latter.
South Korea (Republic of Korea)	:	**AREC** (Act on Registration and Evaluation of Chemicals; “K-REACH”): Please approach your regular contact for more detailed information.

15.2 Chemical safety assessment

A chemical safety assessment according to (EC) regulation 1907/2006 (REACH) has not been carried out for this product.

SECTION 16: Other information

16.1 Material

The details in this document are based on the state of our knowledge at the time of revision. They do not constitute an assurance of the described product properties in terms of statutory warranty requirements.

The providing of this document to a recipient does not relieve the recipient of his or her responsibility toward compliance with all laws and stipulations applicable to the product. This applies in particular to the further sale or distribution of the product or substances or items containing the product, in other jurisdictions and with regard to the protection of third-party intellectual property rights. If the described product is processed or mixed with other substances or materials, the details stated in this document cannot be conferred to the resultant new product unless this has been expressly mentioned. If the product is repackaged, the recipient is obligated to additionally provide the required safety-related information.

WACKER restricts the use of its products inside the human body or in contact with bodily fluids and mucosa. For further details please review our Health Care Policy on www.wacker.com. WACKER may cancel any delivery obligation(s) if the Health Care Policy is not observed.

16.2 Further information:

Commas appearing in numerical data denote a decimal point. Vertical lines in the left-hand margin indicate changes compared with the previous version. This version supersedes all previous versions.

Key or legend to abbreviations and acronyms used in the safety data sheet

ABEK - Multi-Range Filter A, B, E, K; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; APF - Assigned Protection Factor; CAS No. - Chemical Abstracts Service Registry Number; DFG - German Research Foundation; DIN - German institute for standardization; DOC - Dissolved Organic Carbon; d/w - days per week; EC / CE / EG - European Community; EC50 / CE50 - Median effective concentration; ECHA - European Chemicals Agency; ED - endocrine disruptor; EG-RL - test method according to Regulation 440/2008; EN - European Standard; ERC - Environmental Release Category; g/cm³ - gram per cubic centimeter; h - hour(s); H-Code - hazard statement code(s); hPa - Hectopascal; IATA Regs - International Air Transport Association (IATA) Dangerous Goods Regulations;IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk;IC50 / CI50 - half maximal inhibitory concentration;IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IMDG Code - International Maritime Dangerous

Goods Code; ISO - International Organization for Standardization; LC50 / CL50 - medium lethal concentration; LD50 / DL50 - medium lethal dose; LOAEC - Lowest Observed Adverse Effect Concentration; LOAEL - Lowest Observed Adverse Effect Level; MARPOL - International Convention for the Prevention of Marine Pollution from Ships; mg/g - milligrams per gram; mg/kg - milligrams per kilogram; mg/l - milligrams per liter; mg/m³ - milligrams per cubic meter; min - minutes; mJ - millijoule; mm - millimeter; mm²/s - square millimeter per second; mPa.s - Millipascal second(s); MSDS / SDB / SDS - safety data sheet; No Observed Adverse Effect Concentration; NOAEL - No Observed adverse effect level; NOEC - No Observed Effect Concentration; NOEL - No Observed Effect Level; OECD - Organization for Economic Cooperation and Development; PBT - persistent, bioaccumulative, toxic; PC - product category; P-Code - precautionary statement code(s); ppm - parts per million; PROC - process category; RCP - reciprocal calculation-based procedure; RID - convention concerning international carriage by rail; SU - sector of use; SVHC - substance of very high concern; Vol% - volume percent; UN No. - United Nations Dangerous Goods Number; vPvB - very Persistent, very Bioaccumulative

Full text of H-Statements:

Acute Tox. 3; H301 ....:		Acute toxicity Category 3; Toxic if swallowed.
STOT RE 2; H373.....:		Specific target organ toxicity - repeated exposure Category 2; May cause damage to organs through prolonged or repeated exposure if swallowed.
Acute Tox. 4; H312 ....:		Acute toxicity Category 4; Harmful in contact with skin.
Aquatic Chronic 2; H411	:	Long-term (chronic) aquatic hazard Category 2; Toxic to aquatic life with long lasting effects.
STOT RE 1; H372.....:		Specific target organ toxicity - repeated exposure Category 1; Causes damage to organs through prolonged or repeated exposure if inhaled.
Eye Dam. 1; H318.....:		Serious eye damage/eye irritation Category 1; Causes serious eye damage.
Skin Sens. 1B; H317..:		Skin sensitisation Category 1B; May cause an allergic skin reaction.
STOT SE 3; H335 .....:		Specific target organ toxicity - single exposure Category 3; May cause respiratory irritation.
Acute Tox. 4; H312 ....:		Acute toxicity Category 4; Harmful in contact with skin.
Acute Tox. 3; H301 ....:		Acute toxicity Category 3; Toxic if swallowed.
STOT SE 1; H370 .....:		Specific target organ toxicity - single exposure Category 1; Causes damage to organs.
Muta. 2; H341.....:		Germ cell mutagenicity Category 2; Suspected of causing genetic defects.
Repr. 1B; H360F .....:		Reproductive toxicity Category 1B; May damage fertility.
Repr. 1B; H360D.....:		Reproductive toxicity Category 1B; May damage the unborn child.
Acute Tox. 4; H332 ....:		Acute toxicity Category 4; Harmful if inhaled.
Aquatic Chronic 2; H411	:	Long-term (chronic) aquatic hazard Category 2; Toxic to aquatic life with long lasting effects.
Acute Tox. 4; H302 ....:		Acute toxicity Category 4; Harmful if swallowed.
Eye Dam. 1; H318.....:		Serious eye damage/eye irritation Category 1; Causes serious eye damage.
STOT RE 1; H372.....:		Specific target organ toxicity - repeated exposure Category 1; Causes damage to organs through prolonged or repeated exposure.
Flam. Liq. 3; H226.....:		Flammable liquids Category 3; Flammable liquid and vapour.
Repr. 2; H361f.....:		Reproductive toxicity Category 2; Suspected of damaging fertility.
Aquatic Chronic 1; H410	:	Long-term (chronic) aquatic hazard Category 1; Very toxic to aquatic life with long lasting effects.
Flam. Liq. 3; H226.....:		Flammable liquids Category 3; Flammable liquid and vapour.

Classification	Rationale:
Skin sensitisation, Category 1	Calculation method
Reproductive toxicity, Category 1B	Calculation method
Reproductive toxicity, Category 1B	Calculation method
Specific target organ toxicity - repeated exposure, Category 1, by inhalation	Calculation method
Long-term (chronic) aquatic hazard, Category 3	Calculation method
Serious eye damage/eye irritation, Category 1	Calculation method
Acute toxicity, Category 4, oral	Calculation method
Specific target organ toxicity - repeated exposure, Category 2, oral	Calculation method

- End of Safety Data Sheet -