Material Safty Data Sheet

Product	SR911

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Name	SR919
1.2 Recommended use of the chemical and restrictions on use	
Recommended use of the product	Fire stop silicone sealant
Restrictions on use of the product	No data
1.3 Company information	
Company Name	DAEHEUNG CHEMICAL CO., LTD.
Address	52, Sandan-ro15beon-gil,Pyeongtaeksi,Gyeonggi-do
Emergency telephone number	+82-31-663-5251

2. HAZARD IDENTIFICATION

2.1 Hazard, Risk classification	Skin sensitization: Category 1
2.2 GHS label elements	
Symbol	

Signal word	Waring
Harmful Risk phrases	H317 May cause an allergic skin reaction.
Precautions	
Prevention	P261 Avoid breathing dust/fume/gas/mist/vapours/spray. P272 Contaminated work clothing should not be allowed out of the workplace. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
Corresponding	P302+P352 IF ON SKIN: Wash with plenty of soap and water. P333+P313 If skin irritation or rash occurs: Get medical advice/attention P362+P364 Take off contaminated clothing and wash it before reuse.
Storage	Not available
Disposal	P501 Dispose of contents and container in accordance with local regulations.

3. COMPOSITION / INFORMATION ON INTEGREDIENTS

Name	Comon Name	CAS No	Contents(%)
Amorphous, fumed silica	SILICA, AMORPHOUS, FUMED, CRYSTALLINE FREE	112945-52-5	3 ~ 10
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	N-(3-Trimethoxysilylpropyl)ethylenediamine	1760-24-3	0.1 ~ 1
Aluminium hydroxide		21645-51-2	40 ~ 50
Methyl Oximino Silane	SILANE, TRIMETHOXMETHYL-	22984-54-9	1 ~ 5
Polydimethylsiloxane	DIMETHYLPOLYSILOXANE/WATER EMULSIONS	63148-62-9	10 ~ 20
Siloxanes and Silicones, di-Me, hydroxy-terminated	DIMETHYL POLYSILOXANE	70131-67-8	20 ~ 30

4. FIRST AID MEASURES

4.1 Eye contact	Get emergency medical attention. Rinse skin and eyes immediately with plenty of water for at least 20 minutes when in contact with the material.

4.2 In case of skin contact	If skin irritation or rash occurs, seek medical advice and advice.오.
	Wash contaminated clothing before reuse.
	In the case of hot materials, immerse or wash affected areas in a large amount of cold water to remove heat
	Get emergency medical attention.
	Remove contaminated clothing and shoes and isolate contaminated areas.
	Rinse skin and eyes immediately with plenty of water for at least 20 minutes when in contact with the material.
	Prevent spread of contamination on mild skin contact
4.3 Inhalation	Move to a place with fresh air.
	If not breathing, give artificial respiration.
	If breathing is difficult, give oxygen.
	Please warm and stabilize.
4.4 Ingestion	Get emergency medical attention.
4.5 Other precautions	Have the health care worker know about the material and take protective measures

5. FIRE FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media	Use alcohol foam, carbon dioxide or water spray for digestion related to this material.
	Use dry sand or earth for digestion.

5.2. Special hazards arising from the substance or mixture

Hazardous combustion products	Container may explode on heating
	Some are burned but not easily ignited
	Non-flammable, the substance itself is not burned but decomposes on heating and may cause corrosive / toxic fumes
	May cause irritating, corrosive and toxic gases in case of fire

5.3.Protective equipment and precautions for fire-fighting

Protective equipment and precautions for fire-fighting	Be aware that it may be melted and transported.
	In case of tank fire, extinguish at maximum distance or use unmanned fire fighting equipment
	In the event of a large fire in a tank fire, use unmanned fire fighting equipment and allow it to retreat if it is not possible
	Rescuers should wear appropriate protective equipment.
	Extinguish the area and maintain safety distance.
	Some can be transported at high temperatures
	Leaky water may cause contamination.
	Contact may cause skin and eye burns.
	Drill ditches for the disposal of digestive waters to prevent them from being scattered.
	Move container from fire area if it is not hazardous.
	Cool containers with large amounts of water even after the fire has extinguished.
	In the event of a tank fire, if there is a high tone in the pressure relief device or if the tank is discolored, immediately withdraw it
	Tanks Fires in a fire.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal Precautions, protective equipment and emergency procedures	Remove all ignition sources as very fine particles may cause fire or explosion.
	Wipe off any spills immediately and follow all protective precautions.
	Remove all ignition sources.
	Stop the leak if it is not dangerous.
	Do not touch a damaged container or spill without adequate protection.
	Cover with plastic sheet to prevent diffusion
	Note the substances and conditions to avoid

6.2. Environmental precautions	Prevent entry into waterways, sewers, basements, and confined spaces.
6.3. Methods and material for containment and cleaning up	Absorb spillage with inert materials (eg dry sand or earth) and place in a chemical waste container. Absorb liquid and rinse contaminated area with detergent and water..

7. HANDLING AND STORAGE

7.1. Precautions for safe handling	Avoid inhalation.(Dust, fume, gas, mist, steam, spray) Do not carry contaminated clothing out of the workplace. Follow all MSDS / label precautions as product residues may remain after emptying containers. Avoid prolonged or repeated skin contact. Note the substances and conditions to avoid Refer to engineering controls and personal protective equipment.
7.2 Safe storage	The empty drum should be completely drained, properly blocked and immediately returned to the drum regulator or properly positioned.

8. EXPOSURECONTROLS & PERSONAL PROTECTION

8.1. Exposure standards for chemicals, biological exposure standards, etc.	
Domestic regulation	No data
ACGIH regulation	No data
Biological exposure standard	No data
8.2. process management	national air-state using air standard
8.3 Personal protective equipment	
Respiratory protection	Wear a respirator that has been approved by the Korean Occupational Safety and Health Administration in accordance with the physicochemical properties of the substance being exposed.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Appearance	
Physical Form	Paste
Color	White, Gray. Black. ETC
9.2 Odor	Oxime
9.3 Odor threshold	No data
9.4 pH	No data
9.5 Melting point / freezing point	No data
9.6 Boiling point	No data
9.7 Flash point	No data
9.8 Evaporation Rate	No data
9.9 Flammability (solid, gas)	No data
9.10 Upper/lower flammability or explosive limits	No data
9.11 Vapor Pressure	No data
9.12 Solubility	No data
9.13 Vapor Density	No data
9.14 Specific gravity	1.35 ~ 1.40
9.15 N-octanol/water partition coefficient	No data
9.16 Autoignition temperature	No data
9.17 Decomposition Temperature	No data
9.18 Viscosity	Paste
9.19 Molecular weight	No data

10. STABILITY AND REACTIVITY

10.1 Possibility of chemical stability and adverse reaction	
Amorphous, fumed silica	Container may explode on heating Some are burned but not easily ignited Non-flammable, the substance itself is not burned but decomposes on heating and may cause corrosive / toxic fumes May cause irritating, corrosive and toxic gases in case of fire
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Aluminium hydroxide	No data
Methyl Oximino Silane	Polymerization: not polymerized Reactivity: Contact with water or moist air may form flammable and / or toxic gases and vapors.
Polydimethylsiloxane	Stable at normal temperature and pressure Container may explode on heating Some are burned but not easily ignited

Polydimethylsiloxane	May cause irritation and poisonous gas in case of fire Inhalation of the substance may be harmful Some fluids may cause dizziness, suffocation-inducing vapors
Siloxanes and Silicones, di-Me, hydroxy-terminated	Stable at normal temperature and pressure Container may explode on heating Some are burned but not easily ignited May cause irritation and poisonous gas in case of fire Inhalation of the substance may be harmful Some fluids may cause dizziness, suffocation-inducing vapors

10.2 Conditions to avoid

Amorphous, fumed silica	Heat source, spark, flame, etc.
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Aluminium hydroxide	No data
Methyl Oximino Silane	Avoid heat, flames, sparks and other sources of ignition. Containers may rupture or explode if exposed to heat. Keep away from waterworks and sewers.
Polydimethylsiloxane	Heat source, spark, flame, etc.
Siloxanes and Silicones, di-Me, hydroxy-terminated	Heat source, spark, flame, etc.

10.3 Substances to avoid

Amorphous, fumed silica	Combustible materials, reducing materials
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Aluminium hydroxide	No data
Methyl Oximino Silane	Oxidant
Polydimethylsiloxane	Combustible material, Irritant, toxic gas
Siloxanes and Silicones, di-Me, hydroxy-terminated	Combustible material, Irritant, toxic gas

10.4 Hazardous materials generated during decomposition

Amorphous, fumed silica	Corrosive / toxic fume, Irritating, corrosive, toxic gas
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Aluminium hydroxide	During burning, pyrolysis or combustion can produce irritating and highly toxic gases.
Methyl Oximino Silane	No data
Polydimethylsiloxane	No data
Siloxanes and Silicones, di-Me, hydroxy-terminated	No data

11. TOXICOLOGICAL INFORMATION

11.1. Information about possible routes of exposure

Amorphous, fumed silica	Exposure to respiration can cause pneumoconiosis in large quantities of inhalation May cause nausea, vomiting and diarrhea by stimulating the stomach. Exposed to skin contact Exposed by eye contact
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	Respiratory tract burns, allergic reactions Mucosa burn Skin burns, allergic reactions Snow burn
Aluminium hydroxide	No data
Methyl Oximino Silane	No data
Polydimethylsiloxane	Can absorb body by inhalation Can be absorbed by inhalation and extinguisher Through skin, digestive system, can absorb body by inhalation of aerosol Absorption of body by inhalation of steam Can be absorbed by inhalation, skin and digestive system
Siloxanes and Silicones, di-Me, hydroxy-terminated	Can absorb body by inhalation Can be absorbed by inhalation and extinguisher Through skin, digestive system, can absorb body by inhalation of aerosol Absorption of body by inhalation of steam Can be absorbed by inhalation, skin and digestive system

11.2 Health hazard information

Acute toxicity

Oral

Amorphous, fumed silica	LD50 > 3100 ㎎/㎏ Rat

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	LD50 2400 ㎎/㎏ Rat
Aluminium hydroxide	LD50 > 2000 ㎎/㎏ Rat (female, No deaths (OECD TG 423, GLP))
Polydimethylsiloxane	LD50 > 17000 ㎎/㎏ Rat
Siloxanes and Silicones, di-Me, hydroxy-terminated	LD50 > 64 ㎎/㎏ Rat (Labor Department 3)
Percutaneous	
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	LD50 16000 ㎎/㎏ Rabbit
Polydimethylsiloxane	LD50 > 2000 ㎎/㎏ Rabbit
Siloxanes and Silicones, di-Me, hydroxy-terminated	LD50 > 16 ㎎/㎏ Rabbit (Labor Department 1)
Inhalation	
Aluminium hydroxide	Dust LC50 7.6 ㎎/ℓ 1 hr Rat (male (OECD TG 403))
Skin corrosive or irritant	
Amorphous, fumed silica	No skin irritation reported
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No irritation: 24, 48, 72 hours after erythema score less than 1.5
Aluminium hydroxide	No signs of irritation (OECD TG 404)
Severe eye damage or irritation	
Amorphous, fumed silica	No eye irritation reported
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	With stimulation: average observed (24 + 48 + 72 hrs) chemosis 3.0, enanthema 2.5, congestion 1.0, opacity 2.0
Aluminium hydroxide	Severe eye damage / irritation test using rabbit, no irritant(OECD TG 405 ,GLP)
Polydimethylsiloxane	Eye Standard dose test Rabbit amount: 100 mg / 1H; Reaction: Mild (light stimulus)
Respiratory sensitization	No data
Skin sensitization	
Amorphous, fumed silica	No skin sensitization reported in humans
N-(2-Aminoethyl)-3-	Sensitive
Aluminium hydroxide	Skin irritability test results using guinea pig (water), non-irritant (OECD TG 406 ,GLP)
Carcinogenicity	
Industrial Safety and Health Act	No data
Notice of Ministry of Employment and Labor : No data	
IARC	
Amorphous, fumed silica	Group 3 (Silica, amorphous)
OSHA	No data
ACGIH	No data
NTP	No data
EU CLP	No data
Germ cell mutagenicity	
Amorphous, fumed silica	In vivo / In vitro tests There was no evidence that this substance caused mutations In any of the tests. - Genotoxicity effects do not occur when exposed to this material.
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	Return mutation test: negative concentration> 5000 ug / plate HGPRT assay: negative CHO cells: S9-: 0.1-4.0 mg / ml, S9 +: 2.0-5.0 mg / ml Sister exchange chromosomal aberration test: negative, CHO cells: 1.5 to 4.0 mg / ml without S9 activation; 1.0 to 3.5 mg / ml with S9 activation Micronucleus Test: Negative Mouse (Swiss webster): 87.5, 175, and 280 mg / kg
Reproductive toxicity	
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	NOAEL=500 mg/kg bw/day
Specific target organ toxicity (single exposure)	
Amorphous, fumed silica	Short-term exposure may cause respiratory irritation.
Specific target organ toxicity (repeated exposure)	
Amorphous, fumed silica	After two years of long-term application, evidence for reversible effects in this material could not be explained, and at high doses, there was only a slight increase in tissue weight or growth delay from time to time. - showed normal lung reaction.
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	Rat:NOEAL 500mg/kg,0, 25, 125, and 500 mg/kg/day, Exposure period 28 days No effect.
Inhalation hazard	No data

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity

Fish	
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	LC50 200 ㎎/ℓ 96 hr Lepomis macrochirus
Aluminium hydroxide	LC50 > 218.6441 ㎎/ℓ 96 hr Pimephales promelas (Ring formula(ASTM 2000,GLP))

Methyl Oximino Silane	LC50 0.00000975 ㎎/ℓ 96 hr etc
Polydimethylsiloxane	LC50 37.79 ㎎/ℓ 96 hr Lepomis macrochirus
Shellfish	
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	EC50 90 ㎎/ℓ 48 hr Daphnia magna
Aluminium hydroxide	LC50 22 ㎎/ℓ 96 hr etc (Gammarus sp., Exponential)
Methyl Oximino Silane	LC50 0.0000179 ㎎/ℓ 48 hr etc
Polydimethylsiloxane	LC50 44.5 ㎎/ℓ 48 hr Daphnia magna
Algae	
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	ErC50 8.8 ㎎/ℓ 72 hr Selenastrum capricornutum
Aluminium hydroxide	ErC50 0.0455 ~ 0.6999 ㎎/ℓ 72 hr etc (Pseudokirchneriella subcapitata Exponential(OECD Guideline 201))
Methyl Oximino Silane	EC50 0.0000176 ㎎/ℓ 96 hr etc
12.2. Persistence and degradability	
Persistence	
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	log Kow -1.67 ((Estimate))
Aluminium hydroxide	log Kow -0.5304
Methyl Oximino Silane	(Not applicable)
Siloxanes and Silicones, di-Me, hydroxy-terminated	log Kow 2.43
degradability	No data
12.3. Bioaccumulation	
Enrichment	
Aluminium hydroxide	BCF 3.162
Methyl Oximino Silane	BCF 8.49
Siloxanes and Silicones, di-Me, hydroxy-terminated	BCF 14.77
Biodegradability	
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	39 (%) 28 day
12.4. Soil mobility	No data
12.5. Other harmful effects	
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	Underwater stability Half hour Less than 1 hour
Aluminium hydroxide	Fish (Pimephales promelas), NOEC (7d) = 1 156.5 μg / L, ring formula (EPA 2002, GLP) Crustacean (Ceriodaphnia dubia), EC50 (7d) = 250 μg / L, Ring formula (USEPA 2002) (Pseudokirchneriella subcapitata), NOErC (72h) ≥ 4 μg / L, exponential (OECD Guideline 201, GLP)

13. DISPOSAL CONSIDERATIONS

13.1 Disposal method	Dispose of contents and container in accordance with local regulations.
13.2 Disposal considerations	Dispose of contents and container in accordance with local regulations.

14. TRANSPORT INFORMATION

14.1 UN Number (UN No.)	UN transport hazard classification not available
14.2. UN proper shipping name	Not applicable
14.3. Transport hazard class(es)	Not applicable
14.4. Packing group	Not applicable
14.5. Environmental hazards	No data
14.6 Special safety measures that the user needs or needs to know about transportation or transportation	
Emergency measures in case of fire	Not applicable
Emergency Action	Not applicable
14.7 Other International Transportation Regulations	
Air Transport (IATA-DGR)	Not subject to IATA regulations.

15. REGULATORY INFORMATION

15.1 Regulation by the Industrial Safety and Health Act	
Aluminium hydroxide	Toxic substances to be managed
Aluminium hydroxide	Working environment Measured material (measurement cycle: 6 months)
Aluminium hydroxide	Special medical examination subject substance (diagnosis period: 12 months)
15.2 Regulation by Chemical Substance Control Act	No data
15.3 Regulation under dangerous goods safety management law	No data
15.4 Regulation by waste management law	Designated waste

15.5 Other domestic and foreign regulations

Domestic regulation	
Residual Organic Pollutant Control Act	Not available
Foreign regulation	
OSHA regulations	Not applicable
CERCLA regulations	Not applicable
US Administration Information(EPCRA 302 regulations)	Not applicable
US Administration Information(EPCRA 304 regulations)	Not applicable
US Administration Information(EPCRA 313 regulations)	Not applicable
US Administration Information(Rotterdam Convention material)	Not applicable
US Administration Information(Stockholm Convention substance)	Not applicable
US Administration Information(Montreal Protocol substance)	Not applicable
EU Classification information(Confirmed classification result)	Not applicable
EU Classification information(Danger phrases)	Not applicable
EU Classification information(Safety phrases)	Not applicable

16. OTHER INFORMATION

16.1 Source of material

Corporate Solution From Thomson Micromedex, Seton compliance resource center, OECD Screening Information Data Set, International Uniform ChemicaL Information Database(IUCLID), Intermational Programme on Chemical Safety(IPCS INCHEM), EPIWIN, HITE, HSDB, ECOSAR, National Library of Medicine(NLM), The ECOTOXicology database (ECOTOX), The Chemical Database, The Department of Chemistry at the University of Akron, Quantitative Structure Activity Relation(QSAR)

16.2 Date First	2012-09-24
16.3 Revision number and date	
Revision number	5 time
Revision Date	2021-11-18
16.4 Etc.	

○ The MSDS (Material Safty Data Sheet) is edited or partially corrected by referring to the MSDS provided by KOSHA (Korea Occupational Safty and Health Agency)