

Material Safty Data Sheet

Product

SR9000

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Name	SR9000
1.2 Recommended use of the chemical and restrictions on use	
Recommended use of the product	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	Hazardous to the aquatic environment, acute toxicity : Category 1 Hazardous to the aquatic environment, chronic toxicity : Category 1
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2.2 GHS label elements

Symbol



Signal word

Waring

Harmful Risk phrases

H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Precautions

Prevention	P273 Avoid release to the environment.
Corresponding	P391 Collect spillage.
Storage	Not applicable
Disposal	P501 Dispose of contents and container in accordance with local regulations.

Amorphous, fumed silica

Health	0
Fire	1
Reactivity	0

Methyltrimethoxysilane

Health	1
Fire	3
Reactivity	1

Aluminium hydroxide

Health	0
Fire	No data
Reactivity	0

Polydimethylsiloxane

Health	1
Fire	1
Reactivity	0

DIMETHYL(POLYSILOXANE)

Health	1
Fire	2
Reactivity	0

3. COMPOSITION / INFORMATION ON INTEGREDIENTS

Name	Comon Name	CAS No	Contents(%)
Amorphous, fumed silica	SILICA, AMORPHOUS, FUMED, CRYSTALLINE FREE	112945-52-5	1 ~ 5
Methyltrimethoxysilane	METHYLTRIMETHYLOXYSILANE	1185-55-3	1 ~ 3
Aluminium hydroxide		21645-51-2	50 ~ 60
Polydimethylsiloxane	DIMETHYLPOLYSILOXANE/WATER EMULSIONS	63148-62-9	1 ~ 10
DIMETHYL(POLYSILOXANE))	DIMETHYL POLYSILOXANE	70131-67-8	30 ~ 40

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	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.
4.3 Inhalation	Move to a place with fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.
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. 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.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal Precautions, protective equipment and emergency procedures	Avoid inhalation of gases and vapors. Wipe off any spills immediately and follow all protective precautions. 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	Follow all MSDS / label precautions as product residues may remain after emptying containers.
	Note the substances and conditions to avoid
	Refer to engineering controls and personal protective equipment.
7.2 Safe storage	No data

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
8.3 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	alcohol
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	1.45 ~ 1.50
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
Amorphous, fumed silica	Some are burned but not easily ignited
Amorphous, fumed silica	Non-flammable, the substance itself is not burned but decomposes on heating and may cause corrosive / toxic fumes
Amorphous, fumed silica	May cause irritating, corrosive and toxic gases in case of fire
Methyltrimethoxysilane	Flammable liquids and vapors
Methyltrimethoxysilane	Violent reaction may cause fire and explosion.
Methyltrimethoxysilane	May form explosive mixture at or above flash point
Methyltrimethoxysilane	Container may explode on heating
Methyltrimethoxysilane	Highly flammable: easily ignited by heat, spark, flame
Methyltrimethoxysilane	Leakage is a fire / explosion hazard.
Methyltrimethoxysilane	Vapors may explode indoors, outdoors, and in drains
Methyltrimethoxysilane	Vapors may form explosive mixtures with air
Methyltrimethoxysilane	Vapors may cause dizziness or suffocation without knowledge.

Methyltrimethoxysilane	May cause irritation, corrosive and toxic gas in case of fire.
Methyltrimethoxysilane	Inhalation and contact may irritate or burn the skin and eyes.
Aluminium hydroxide	Container may explode on heating
Aluminium hydroxide	Some are burned but not easily ignited
Aluminium hydroxide	May cause irritating, corrosive and toxic gases in case of fire
Polydimethylsiloxane	Stable at normal temperature and pressure
Polydimethylsiloxane	Container may explode on heating
Polydimethylsiloxane	Some are burned but not easily ignited
Polydimethylsiloxane	May cause irritation and poisonous gas in case of fire
Polydimethylsiloxane	Inhalation of the substance may be harmful
Polydimethylsiloxane	Some fluids may cause dizziness, suffocation-inducing vapors
DIMETHYL(POLYSILOXANE)	Stable at normal temperature and pressure
DIMETHYL(POLYSILOXANE)	Container may explode on heating
DIMETHYL(POLYSILOXANE)	Some are burned but not easily ignited
DIMETHYL(POLYSILOXANE)	May cause irritation and poisonous gas in case of fire
DIMETHYL(POLYSILOXANE)	Inhalation of the substance may be harmful
DIMETHYL(POLYSILOXANE)	Some fluids may cause dizziness, suffocation-inducing vapors

10.2 Conditions to avoid

Amorphous, fumed silica	Heat source, spark, flame, etc.
Methyltrimethoxysilane	Keep away from heat, sparks, open flame and heat. – No smoking
Aluminium hydroxide	Heat source.
Polydimethylsiloxane	Heat source, spark, flame, etc.
DIMETHYL(POLYSILOXANE)	Heat source, spark, flame, etc.

10.3 Substances to avoid

Amorphous, fumed silica	Combustible materials, reducing materials
Amorphous, fumed silica	segregation group
Methyltrimethoxysilane	No data
Aluminium hydroxide	No data
Polydimethylsiloxane	Combustible material
Polydimethylsiloxane	Irritant, toxic gas
DIMETHYL(POLYSILOXANE)	Combustible material
DIMETHYL(POLYSILOXANE)	Irritant, toxic gas

10.4 Hazardous materials generated during decomposition

Amorphous, fumed silica	Corrosive / toxic fume
Amorphous, fumed silica	Irritation, Corrosive, Toxic gas
Methyltrimethoxysilane	During burning, pyrolysis or combustion can produce irritating and highly toxic gases.
Aluminium hydroxide	Irritation, Toxic gas
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	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
Methyltrimethoxysilane	Short term exposure to irritation No information available
Aluminium hydroxide	No data
Polydimethylsiloxane	Can absorb body by inhalation
Polydimethylsiloxane	Can be absorbed by inhalation and extinguisher
Polydimethylsiloxane	Through skin, digestive system, can absorb body by inhalation of aerosol
Polydimethylsiloxane	Absorption of body by inhalation of steam
Polydimethylsiloxane	Can be absorbed by inhalation, skin and digestive system
DIMETHYL(POLYSILOXANE)	Can absorb body by inhalation
DIMETHYL(POLYSILOXANE)	Can be absorbed by inhalation and extinguisher
DIMETHYL(POLYSILOXANE)	Through skin, digestive system, can absorb body by inhalation of aerosol
DIMETHYL(POLYSILOXANE)	Absorption of body by inhalation of steam
DIMETHYL(POLYSILOXANE)	Can be absorbed by inhalation, skin and digestive system

11.2 Health hazard information

Acute toxicity

Oral

Amorphous, fumed silica	LD50 > 3100 mg/kg Rat
Methyltrimethoxysilane	LD50 11685 mg/kg Rat (12.3 ml/kg)
Aluminium hydroxide	LD50 > 2000 mg/kg Rat (female, No deaths (OECD TG 423, GLP))
Polydimethylsiloxane	LD50 > 17000 mg/kg Rat
DIMETHYL(POLYSILOXANE)	LD50 > 64 mg/kg Rat (Labor Department 3)

Percutaneous

Amorphous, fumed silica	No data
Methyltrimethoxysilane	(No data)
Aluminium hydroxide	No data
Polydimethylsiloxane	LD50 > 2000 mg/kg Rabbit
DIMETHYL(POLYSILOXANE)	LD50 > 16 mg/kg Rabbit (Labor Department 1)

Inhalation

Amorphous, fumed silica	No data
Methyltrimethoxysilane	(No data)
Aluminium hydroxide	Dust LC50 7.6 mg/l 1 hr Rat (male (OECD TG 403))
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	No data

Skin corrosive or irritant

Amorphous, fumed silica	No skin irritation reported
Methyltrimethoxysilane	rabbit, mild stimulus OPEN DRAIZE TEST, Mild
Aluminium hydroxide	No signs of irritation (OECD TG 404)
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	No data

Severe eye damage or irritation

Amorphous, fumed silica	No eye irritation reported
Methyltrimethoxysilane	rabbit, mild stimulus OPEN DRAIZE TEST, Mild
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 stimulus
DIMETHYL(POLYSILOXANE)	No data

Respiratory sensitization

Amorphous, fumed silica	No data
Methyltrimethoxysilane	No data
Aluminium hydroxide	No data
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	No data

Skin sensitization

Amorphous, fumed silica	No skin sensitization reported in humans
Methyltrimethoxysilane	No data
Aluminium hydroxide	Skin irritability test results using guinea pig (water), non-irritant (OECD TG 406 ,GLP)
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	No data

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)
Methyltrimethoxysilane	No data
Aluminium hydroxide	No data
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	No data

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.
Methyltrimethoxysilane	No data
Aluminium hydroxide	No data
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	No data
Reproductive toxicity	No data
Specific target organ toxicity (single exposure)	
Amorphous, fumed silica	Short-term exposure may cause respiratory irritation.
Methyltrimethoxysilane	No data
Aluminium hydroxide	No data
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	No data
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.
Methyltrimethoxysilane	No data
Aluminium hydroxide	No data
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	No data
Aspiration hazard	No data
Other adverse effects	No data

12. ECOLOGICAL INFORMATION

12.1 Ecotoxicity

Fish

Amorphous, fumed silica	No data
Methyltrimethoxysilane	LC50 32662.842 mg/l 96 hr
Aluminium hydroxide	LC50 > 218.6441 mg/l 96 hr <i>Pimephales promelas</i> (ring formula, ASTM 2000, GLP)
Polydimethylsiloxane	LC50 37.79 mg/l 96 hr <i>Lepomis macrochirus</i>
DIMETHYL(POLYSILOXANE)	No data

Shellfish

Amorphous, fumed silica	No data
Methyltrimethoxysilane	LC50 29104.090 mg/l 48 hr
Aluminium hydroxide	LC50 22 mg/l 96 hr etc (<i>Gammarus</i> sp., Exponential)
Polydimethylsiloxane	LC50 44.5 mg/l 48 hr <i>Daphnia magna</i>
DIMETHYL(POLYSILOXANE)	No data

Algae

Amorphous, fumed silica	No data
Methyltrimethoxysilane	EC50 1.000 mg/l 96 hr
Aluminium hydroxide	ErC50 0.0455 ~ 0.6999 mg/l 72 hr etc (<i>Pseudokirchneriella subcapitata</i> Exponential(OECD Guideline 201))
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	No data

12.2 Persistence and degradability

Persistence

Amorphous, fumed silica	No data
Methyltrimethoxysilane	log Kow -0.67 ((Estimate))
Aluminium hydroxide	log Kow -0.5304
Polydimethylsiloxane	No data
DIMETHYL(POLYSILOXANE)	log Kow 2.43

degradability

Amorphous, fumed silica	No data
Methyltrimethoxysilane	(No data)
Aluminium hydroxide	No data

	Polydimethylsiloxane	No data
	DIMETHYL(POLYSILOXANE)	No data
12.3 Bioaccumulation		
	Enrichment	
	Amorphous, fumed silica	No data
	Methyltrimethoxysilane	(No data)
	Aluminium hydroxide	No data
	Polydimethylsiloxane	No data
	DIMETHYL(POLYSILOXANE)	BCF 14.77
	Biodegradability	
	Amorphous, fumed silica	No data
	Methyltrimethoxysilane	(No data)
	Aluminium hydroxide	No data
	Polydimethylsiloxane	No data
	DIMETHYL(POLYSILOXANE)	No data
12.4 Soil mobility		
	Amorphous, fumed silica	No data
	Methyltrimethoxysilane	No data
	Aluminium hydroxide	No data
	Polydimethylsiloxane	No data
	DIMETHYL(POLYSILOXANE)	No data
12.5 Other adverse effects		
	Amorphous, fumed silica	No data
	Methyltrimethoxysilane	No data
	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)
	Polydimethylsiloxane	No data
	DIMETHYL(POLYSILOXANE)	No data
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.
	14.1 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	
	Amorphous, fumed silica	Work environment Measured material (measurement cycle: 6 months)
	Amorphous, fumed silica	Special medical examination target substance (diagnosis period: 24 months)
	Amorphous, fumed silica	Exposure standard setting substance
	Aluminium hydroxide	Toxic substances to be managed
	Aluminium hydroxide	Work environment Measured material (measurement cycle: 6 months)
	Aluminium hydroxide	Special medical examination target substance (diagnosis period: 12 months)
	Aluminium hydroxide	Exposure standard setting substance
	Polydimethylsiloxane	No data
	DIMETHYL(POLYSILOXANE)	No data

15.2 Regulation by Chemical Substance Control Act	Not applicable
15.3 Regulation under dangerous goods safety management law	Not applicable Not applicable to dangerous goods in accordance with Annex 1 of the Enforcement Decree of the Dangerous Goods Safety Management Act
15.4 Regulation by waste management law	Type: 1 Lung synthetic polymer compound This material is classified as designated waste according to Annex 1 of Article 3 of the Enforcement Decree of the Waste Management Act.
15.5 Other domestic and foreign regulations	
Domestic regulation	
Residual Organic Pollutant Control Act	Not applicable
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

Flammable liquid Category 2 remove : UL94 V-0 Flame retardant certification

Amorphous, fumed silica

Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(Appearance, color, initial boiling point and boiling point range, Vapor pressure, solubility, Specific gravity, molecular mass, Information on the likely routes of exposure)

Seton compliance resource center(<http://www.setonresourcecenter.com>)(Information on the likely routes of exposure)

OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)(Oral, Skin corrosive/irritant, Serious eye damage/eye irritation, Skin sensitization)

International Uniform Chemical Information Database(IUCLID)(<http://ecb.jrc.it/esis>)(Germ Cell Mutagenicity)

OECD SIDS(<http://www.chem.unep.ch/irptc/sids/OECDIDS/silicates.pdf>)(Specific target organ toxicity (single exposure))

International Programme on Chemical Safety(IPCS INCHEM)(<http://www.inchem.org/>)(Specific target organ toxicity (repeated exposure))

OECD Screening Information Data Set(<http://cs3-hq.oecd.org/scripts/hpv/>)(Specific target organ toxicity (repeated exposure))

Aluminium hydroxide

Chemical book(Melting point / freezing point)

ICSC(flash point(solid, gas), vapor pressure, Auto ignition temperature)

ECHA(Oral, inhalation, Serious eye damage/eye irritation, Skin sensitization, fish, shellfish, algae, other adverse effects)

IUCLID(Skin corrosive/irritant)

Molbase(Persistence)

Polydimethylsiloxane

Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(Appearance, initial boiling point and boiling point range, flash point, Specific gravity, molecular mass)

National Library of Medicine(NLM)(<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?CHEM>)(Oral, Percutaneous)

Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(Serious eye damage/eye irritation)

The ECOTOXicology database (ECOTOX)(http://cfpub.epa.gov/ECOTOX/quick_query.htm)(fish, shellfish)

The Chemical Database, The Department of Chemistry at the University of Akron(<http://ull.chemistry.uakron.edu/erd>)

DIMETHYL(POLYSILOXANE)

Corporate Solution From Thomson Micromedex(<http://csi.micromedex.com>)(Appearance, color, odour, Melting point/freezing point, Initial boiling point and boiling range, Vapor pressure, Specific gravity, Auto ignition temperature, viscosity, Oral, Percutaneous)

Sigma Aldrich(flash point)

Quantitative Structure Activity Relation(QSAR)(Partition coefficient: n-octanol/water(Kow), Persistence, Enrichment)

16.2 Date First

2013-05-28

16.3 Revision number and date

Revision number

6 time

Revision Date

2019-05-02

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)