Material Safty Data Sheet

Product	MSR3511

1. PRODUCT AND COMPANY IDENTIFICATION

1.1 Product Name	MSR3511
1.2 Recommended use of the chemical and restrictions on use	
Recommended use of the product	Construction modified 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 In contact with water releases flammable gases. P272 May intensify fire; oxidiser. P280 Contains gas under pressure; may explode if heated. P302+P352 IF ON SKIN: Wash with plenty of soap and water.
Corresponding	P333+P313 If skin irritation or rash occurs, seek medical advice. P362+P364 Remove contaminated clothing and wash before reuse.
Storage	Not available
Disposal	P501 Dispose of contents/container to ···
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	
Health	3
Fire	1
Reactivity	1
Lime stone	
Health	2
Fire	0
Reactivity	0
Diisononyl phthalate	
Health	1
Fire	1
Reactivity	0
Silylated polyurethane resin	
Health	1
Fire	2
Reactivity	1

3. COMPOSITION / INFORMATION ON INTEGREDIENTS

Name	Comon Name	CAS No	Contents(%)
N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	(N-(3-(TRIMETHOXYSILYL)PROPYL)ETHYL	1760-24-3	0.1 ~ 1
Lime stone	CARBONIC ACID, CALCIUM SALT	471-34-1	40 ~ 50
Diisononyl phthalate	1,2-benzenedicarboxylic acid, di-C8-10-branched alkyl esters,	68515-48-0	10 ~ 20
Silylated polyurethane resin	Modified Polyurethan sealant	Secret	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

If skin irritation or rash occurs, seek medical advice

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.

In case of contact with substance, immediately wash skin and eyes with running water for more than 20 minutes.

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 measures

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.

Protective equipment and precautions for fire-fighting measures	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	(Dust, fume, gas, mist, steam, spray). 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. 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	
Lime stone	TWA - 10mg/m3
ACGIH regulation	No data
Biological exposure standard	No data
8.2 Appropriate engineering controls	To separate processes, to use local exhaust, or to perform other engineering controls to adjust the air level below the open standards.
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, Black. Gray.. 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	1.60 ~ 1.65
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

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	Stable at normal temperature and pressure
Diisononyl phthalate	Container may explode on heating
Diisononyl phthalate	Some are burned but not easily ignited
Diisononyl phthalate	May cause irritation and poisonous gas in case of fire
Diisononyl phthalate	Inhalation of the substance may be harmful
Diisononyl phthalate	Some fluids may cause dizziness, suffocation-inducing vapors
Silylated polyurethane resin	Stable at normal temperature and pressure

10.2 Conditions to avoid

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	Heat source, spark, flame, etc.
Silylated polyurethane resin	Avoid contact with acids, bases, water, strong oxidants, water etc.

10.3 Substances to avoid

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	Combustible material, reducing material
Diisononyl phthalate	Combustible material
Diisononyl phthalate	Irritant, toxic gas
Silylated polyurethane resin	Base, acid, oxidizing agent

10.4 Hazardous materials generated during decomposition

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	During burning, pyrolysis or combustion may produce irritating and highly toxic gases.
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

11. TOXICOLOGICAL INFORMATION

11.1. Information about possible routes of exposure

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	Respiratory tract burns, allergic reactions Mucous membrane burn Skin burns, allergic reactions Eye burn
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

11.2 Health hazard information

Acute toxicity

Oral

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	LD50 2400 ㎎/㎏ Rat
Lime stone	LD50 6450 ㎎/㎏ Rat
Diisononyl phthalate	LD50 2550 ㎎/㎏ Rat
Silylated polyurethane resin	LD50 878 ㎎/㎏

Percutaneous

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	LD50 16000 ㎎/㎏ Rabbit
Lime stone	No data
Diisononyl phthalate	LD50 > 3160 ㎎/㎏ Rabbit
Silylated polyurethane resin	No data

Inhalation

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

Skin corrosive or irritant

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No irritation: 24, 48, 72 hours after erythema score less than 1.5
Lime stone	No data
Diisononyl phthalate	DINP is not an irritant for skin and eyes
Silylated polyurethane resin	Normal irritation of Rabbit-Dragise test, irritation to person

Severe eye damage or irritation

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
Lime stone	No data
Diisononyl phthalate	DINP is not an irritant for skin and eyes
Silylated polyurethane resin	Extreme irritation of Rabbit-Draize test, slight irritation to person

Respiratory sensitization

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

Skin sensitization

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	Sensitive
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

Carcinogenicity

Industrial Safety and Health Act

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

Notice of Ministry of Employment and Labor

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data

Diisononyl phthalate	No data
Silylated polyurethane resin	No data

IARC

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	group 3

OSHA

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

ACGIH

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

NTP

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

EU CLP

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

Germ cell mutagenicity

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
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	In vitro Salmonella typhimurium Ames test showed negative

Reproductive toxicity

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	NOAEL=500 mg/kg bw/day
Lime stone	No data
Diisononyl phthalate	First- and second-generation toxicity tests showed no effects on reproductive toxicity other than some minor effects. There is little maternal toxicity in the development toxicity test

Silylated polyurethane resin	No data

Specific target organ toxicity (single exposure)

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	Causes irritation inhalation.
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

Specific target organ toxicity (repeated exposure)

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	Rat:NOEAL 500mg/kg,0, 25, 125, and 500 mg/kg/day, Exposure period 28 days No effect.
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	Exposure causes blood system abnormalities, gastrointestinal disorders, hormonal system or more

Inhalation hazard

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity

Fish

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	LC50 200 ㎎/ℓ 96 hr Lepomis macrochirus
Lime stone	LC50 > 56000 ㎎/ℓ 96 hr
Diisononyl phthalate	LC50 > 0.14 ㎎/ℓ 96 hr Pimephales promelas (GLP:yes)
Silylated polyurethane resin	No data

Shellfish

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	EC50 90 ㎎/ℓ 48 hr Daphnia magna
Lime stone	No data
Diisononyl phthalate	EC50 > 0.086 ㎎/ℓ 48 hr Daphnia magna (GLP:yes)
Silylated polyurethane resin	No data

Algae

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	ErC50 8.8 ㎎/ℓ 72 hr Selenastrum capricornutum
Lime stone	EC50 22000 ㎎/ℓ 96 hr
Diisononyl phthalate	EC50 > 2.8 ㎎/ℓ 96 hr Selenastrum capricornutum (GLP:yes)
Silylated polyurethane resin	No data

12.2. Persistence and degradability

Persistence

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	log Kow -1.67 ((Estimate))
Lime stone	No data
Diisononyl phthalate	log Kow 9.52

Silylated polyurethane resin	log Kow 2.43

degradability

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

12.3. Bioaccumulation

Enrichment

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	BCF 3.162
Diisononyl phthalate	No data
Silylated polyurethane resin	BCF 14.77

Biodegradability

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	39 (%) 28 day
Lime stone	No data
Diisononyl phthalate	> 99 (%) 28 day (type : aerobic)
Silylated polyurethane resin	No data

12.4. Soil mobility

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	No data
Lime stone	No data
Diisononyl phthalate	No data
Silylated polyurethane resin	No data

12.5. Other harmful effects

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane	Underwater stability Half hour Less than 1 hour
Lime stone	No data
Diisononyl phthalate	Acute toxicity effects not reported in water solubility limits
Silylated polyurethane resin	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. 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

Lime stone	Working environment Measured material (measurement cycle: 6 months)
Lime stone	Special medical examination subject substance (diagnosis period: 24 months)
Lime stone	Exposure standard setting substance
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

N-(2-Aminoethyl)-3-aminopropyltrimethoxysilane

OECD 401, EEC 67/548 1967)-79/831, OECD SIDS(Oral)

OECD SIDS(Percutaneous)

OECD TG 404 ,OECD SIDS(Skin corrosive or irritant)

OECD TG 405 OECD SIDS(Severe eye damage or irritation)

OECD TG406, OECD SIDS (1992)(Skin sensitization)

EPA Health Effect Test Guidelines, EPA Report 560/6-83-001, OECD SIDS(Germ cell mutagenicity)

EPA Health Effects Test Guidelines, OEC SIDS(Germ cell mutagenicity)

OECD TG 471, Directive 84/449/EEC(Germ cell mutagenicity)

OECD TG 422, OECD SIDS(Reproductive toxicity)

OECD TG 422; US EPA Guideline OPPTS 870.3650, OECD SIDS(Specific target organ toxicity (repeated exposure))

Static,EPA-660/3-75-009,SIDS(fish)

Static,OECD Guide-line 202,SIDS(shellfish)

OECD Guide-line 201,SIDS(Algae)

OECD SIDS(Biodegradable)

Lime stone

Diisononyl phthalate

International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(Oral)

International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(Percutaneous)

OECD Screening Information Data Set(http://cs3-hq.oecd.org/scripts/hpv/)(Skin corrosive or irritant)

OECD Screening Information Data Set(http://cs3-hq.oecd.org/scripts/hpv/)(Severe eye damage or irritation)

EU RAR(Reproductive toxicity)

International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(fish)

International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(shellfish)

International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(Algae)

Quantitative Structure Activity Relation(QSAR)(Persistence)

International Uniform ChemicaL Information Database(IUCLID)(http://ecb.jrc.it/esis)(Biodegradable)

EU RAR(Other adverse effects)

National Emergency Management Agency(http://hazmat.nema.go.kr/index.jsp)

Silylated polyurethane resin

Reference MSDS

16.2 Date First	2017-09-01
16.3 Revision number and date	
Revision number	time
Revision Date	0

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)