MATERIAL SAFETY DATA SHEET

REOLOSIL FUMED SILICA

1. CHEMICAL AND DISTRIBUTOR IDENTIFICATION

Product Name	**REOLOSIL FUMED SILICA**
Synonyms	Silicon dioxide, synthetic amorphous silica, pyogenic (fumed) amorphous silica
Recommended use	Rheological control, flow agent, anti-caking agent, anti-blocking agent, anti-settling agent, spray aid, thickening agent, carrier, viscosity control agent, glossing or matting agent, chemical intermediate, stabilization agent, filler, reinforcing agent in: coatings, adhesives and/or sealants, silicone elastomer, rubber products, suspension, dispersion, batteries, cosmetics, inks and toners, paints, hygiene and sanitary products, others
Restrictions on use	Not applicable
Distributor	SEA Olympus Marketing, Inc. SEA Olympus Bldg., A.C. Cortes Ave., Mandaue City, Cebu Philippined 6014 Telephone No: (032) 346-7137

2. HAZARDS IDENTIFICATION

Hazard identification	Not a hazardous substance or mixture to Taiwan Occupational Safety and Health Act
Label elements	
Signal word	None
Pictogram	None
Hazard statements	None
Precautionary statements	None
Hazards not otherwise classified (HNOC)	None
Potential routes of exposure	Inhalation, skin contact, eye contact
Eye contact	May cause mechanical irritation. Avoid contact with eyes.
Skin contact	May cause mechanical irritation and skin drying. Avoid contact with skin. No cases of sensitization in humans have been reported.
Inhalation	Dust may be irritating to respiratory tract. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. See also Section 8.
Ingestion	Adverse health effects are not expected. See Section 11.
Carcinogenicity	Does not contain any substances greater than 0.1% listed by IARC (International Agency for Research on Cancer), NTP (National Toxicology Program), OSHA (Occupational Safety and Health Administration), ACGIH (American Conference for Governmental Industrial Hygienists, or EU (European Union). See also Section 11.

Target organ effects	Lungs. See Section 11.
Medical conditions aggravated by exposure	Asthma, respiratory disorder
Potential environmental effects	None known. See Section 12.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical name	CAS No.	Weight %	GHS Classification
Synthetic amorphous, pyrogenic Silica	112945-52-5	>99.9	-

Regulatory information is found under the general silica: CAS RN 7631-86-9, EINECS RN 231-545-4.

Other information: The hyphen (-) means “not applicable”.

4. FIRST AID MEASURES

First aid measures

Skin contact	Wash thoroughly with soap and water. Seek medical attention if symptoms develop.
Eye contact	Flush eyes immediately with large amounts of water for 15 minutes. Seek medical attention if symptoms develop.
Inhalation	If cough, shortness of breath or other breathing problems occur, move to fresh air. Seek medical attention if symptoms persist. If necessary, restore normal breathing through standard first aid measures.
Ingestion	Do not induce vomiting. If conscious, give several glasses of water. Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

Symptoms	The most important known symptoms and effects are described in Section 2 and/or in Section 11.

Indication of any immediate medical attention and special treatment needed

Note to physician	Treat symptomatically.

5. FIREFIGHTING MEASURES

Suitable extinguishing media	Silica is non-combustible; therefore no extinguishing media needs to be identified.
Unsuitable extinguishing media	None
Specific hazards arising from the chemical	None
Hazardous combustion products	None
Protective equipment and precautions for firefighters	Wear suitable protective equipment. In the event of fire, wear self-contained breathing apparatus.
Risk of dust explosion	Not applicable

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precaution	Avoid dust formation. Ensure adequate ventilation. Use personal protective equipment. See also Section 8.
For emergency responders	Use personal protection recommended in Section 8.

Environmental precautions

Environmental precautions	Contain spilled product on land, if possible. Local authorities should be advised if significant spillages cannot be contained.

Methods and material for containment and cleaning up

Methods for containment	Prevent further leakage or spillage if safe to do so.
Methods for cleaning up	Clean up promptly by vacuum. Use a vacuum with high efficiency air (HEPA) filtration is recommended. Do not create a dust cloud by using a brush or compressed air. Pick up and transfer to properly labeled containers. See Section 13.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on safe handling	Avoid contact with skin and eyes. Avoid dust formation. Do not breathe dust. Provide appropriate exhaust ventilation at machinery and at places where dust can be generated. Do not create a dust cloud by using a brush or compressed air. Take precautionary measures against static discharges. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations. Fine dust is capable of penetrating electrical equipment and may cause electrical shorts.
General hygiene considerations	Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Storage conditions	Keep containers tightly closed in a dry and well-ventilated place. Do not store together with volatile chemicals as they may be absorbed onto product. Store at ambient conditions. Keep in properly-labeled containers.
Incompatible materials	None known.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure guidelines: The table below is a summary. Please see the specific legislation for complete information.

Amorphous silica, The regulatory exposure limits are found under the general silica, CAS RN 7631-86-9:	Australia	2 mg/m^3, TWA, respirable
	Austria MAK	4 mg/m^3, TWA, inhalable fraction
	Finland	5 mg/m^3
	Germany TRGS 900	4 mg/m^3, TWA, inhalable fraction
	India	10 mg/m^3, TWA
	Ireland	2.4 mg/m^3, TWA, respirable dust
	Norway	1.5 mg/m^3, TWA, respirable dust
	Switzerland	4 mg/m^3, TWA

	UK WEL	6 mg/m^3, TWA, inhalable fraction
	OSHA PEL	2.4 mg/m^3, TWA, respirable fraction 6 mg/m^3 (54 FR2701)
Dust, or particulates not otherwise specified	Belgium	10 mg/m^3, TWA, inhalable 3 mg/m^3, TWA, respirable
	China	8 mg/m^3, TWA 10 mg/m^3, STEL
	France	10 mg/m^3, TWA inhalable dust 5 mg/m^3, TWA respirable dust
	Italy	10 mg/m^3, TWA, inhalable 3 mg/m^3, TWA, respirable
	Malaysia	10 mg/m^3, TWA, inhalable 3 mg/m^3, TWA, respirable
	Spain	10 mg/m^3, VLA, inhalable 3 mg/m^3, VLA, respirable
	US ACGIH-PNOS	10 mg/m^3, TWA, inhalable 3 mg/m^3, TWA, respirable
	US OSHA-PEL	15 mg/m^3, TWA, total dust 5 mg/m^3, TWA,respirable

Note

MAK	Maximale Arbeitsplatzkonzentration (Maximum Workplace Concentration)
PEL	Permissible Exposure Limit
PNOS	Particulate Not Otherwise Specified
STEL	Short-Term Exposure Limit
TRGS	Technische Regeln fur Gefahrstoffe (Technical Rule for Hazardous Materials)
TWA	Time Weighted Average
US ACGIH	United States American Conference of Government Industrial Hygienists
US OSHA	United States Occupational Safety and Health Administration
VLA	Valore Limite Ambientales (Environmental Limit Value
WEL	Workplace Exposure Limit

Engineering Controls	Ensure adequate ventilation to maintain exposures below occupational limits. Provide appropriate local exhaust ventilation at machinery and at places where dust can be generated.

Personal protective equipment (PPE)

Respiratory protection	Approved respirator may be necessary if local exhaust ventilation is not adequate.
Hand protection	Wear protective gloves to prevent sin drying. Use protective barrier cream before handling the product. Wash hands and other exposed skin with mild soap and water.
Eye/face protection	Wear eye/face protection. Wear safety glasses with side shields (or goggles).
Skin and body protection	Wear suitable protective clothing. Wash clothing daily. Work clothing should not be allowed out of the workplace.
Other	Handle in accordance with good industrial hygiene and safety practice. Emergency eyewash and safety shower should be located nearby.
Environmental exposure controls	In accordance with all local legislation and permit requirements as applicable for dusts.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state:	Solid	Odor:	None
Appearance:	Powder	Odor threshold:	Not applicable
Color:	White		

Property	Values	Remarks/Method
pH:	3.6-4.5	In-house testing
Melting point/freezing point:	1700	NIOSH Pocket Guide to Chemical Hazards
Boiling point/boiling range:	2230	NIOSH Pocket Guide to Chemical Hazards
Evaporation rate:		Not applicable
Vapor pressure:		Not applicable
Vapor density:		Not applicable
Density:	2.2 g/cm^3	@ 20
Bulk density:	30-150 kg/m^3	DIN/ISO 787:11
Specific gravity at 20 :	2.2	
Water solubility:	Slightly soluble	According to OCED 105
Solubility(ies):		No information available
Partition coefficient (n-octanol/water):		Not applicable
Decomposition temperature:		Not applicable
Viscosity:		Not applicable
Kinematic viscosity:		Not applicable
Dynamic viscosity:		Not applicable
Oxidizing properties:		No oxidizing properties
Softening point:		Not applicable
VOC content (%):		Not applicable
%volatile (by volume):		Not applicable
%volatile (by weight)		Not applicable
Surface tension:		Not applicable
Explosive properties:		Non-explosive
Flash point:		Not combustible
Flammability (solid, gas):		Not flammable. Product resists ignition ad does not promote flame spread
Flammability limit in air:		Not applicable
Explosion limits in air- upper		Not applicable
Explosion limits in air- lower		Not applicable
Auto-ignition temperature		Not applicable
Maximum ignition temp.		Not applicable
Maximum ignition energy		Not applicable
Ignition energy		Not applicable
Max. absolute explosion pressure		Not applicable
Max. rate of pressure rise		Not applicable
Burn velocity		Not combustible
Kst value		Not applicable
Dust explosion classification		Not applicable

End point is listed “not applicable” due to the inherent properties of the substance.
“No information available” indicates testing has not been performed

10. STABILITY AND REACTIVITY

Reactivity	Not reactive. Substance is an inert inorganic solid.
Stability	Stable under recommended handling and storage conditions.
Possibility of hazardous reactions	None under normal processing.
Hazardous polymerization	Hazardous polymerization does not occur.
Conditions to avoid	None known.
Incompatible materials	None known.
Explosion data	Will not cause dust explosion. See also Section 9.
Sensitivity to mechanical impact	None
Sensitivity to static discharge	This material in an inorganic dust and will not create not support conditions that would result in a dust explosion or fire. Take precautionary measures against static discharges. Avoid dust formation. All metal parts of the mixing and processing equipment must be earthed/grounded. Ensure all equipment is electrically earthed/grounded before beginning transfer operations.
Hazardous decomposition products	None known.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Oral LD_{50}	LD_{50}/oral/rat≥ 5000 mg/kg. No deaths occurred and no signs of toxicity were seen during the observation periods after single oral administration of silica (OECD 401).
Inhalation LC_{50}	Due to the product's physical characteristics, no suitable testing procedure is available.
Dermal LD_{50}	LD_{50}/dermal/rabbit≥ 2000 mg/kg. Very slight transient erythema in one animal. No signs of systemic or organ toxicity (OECD 402).
Skin corrosion/irritation	Primary irritation index= 0/8 @ 24 hr. Not classified as an irritant (OECD 405).
Serious eye damage/eye irritation	Draize score 1.0/110 24 hr. Not classified as an irritant in rabbit studie (OECD 405). High dust concentrations may cause mechanical irritation.
Sensitization	No experimental animal data are available. No cases of sensitization in humans have been reported.
Mutagenicity	Not mutagenic in Ames test. Negative in the unscheduled DNA synthesis assay. Negative in the chromosome aberration test in Chinese hamster ovary (CHO) cells.
Carcinogenicity	No evidence of carcinogenicity was observed in multiple animal species following repeated oral or inhalation exposure to amorphous silica. Similarly, epidemiology studies show no evidence of carcinogenicity in workers who manufacture amorphous silica.
Reproductive toxicity	No effects on reproductive organs or fetal development have been reported in animal toxicity studies.
STOT- single exposure	Based on available data, specific target organ toxicity is not

	expected after single oral, single inhalation, or single dermal exposure.
STOT- repeated exposure	Repeated dose toxicity: oral (rat), 2 weeks to 6 months, no significant treatment-related adverse effects at doses of up to 8% silica in the diet. Repeated dose toxicity: inhalation (rat), 13 weeks, Lowest Observed Effect Level (LOEL)= 1.3 mg/m^3 based on mild reversible effects in the lungs. Repeated dose toxicity: inhalation (rat), 90 days, LORL=1 mg/m^3 based on reversible effects in the lungs and in the nasal cavity. Based on available data, a STOT-RE classification is not warranted
Aspiration hazard	Based on industrial experience and available data, no aspiration hazard is expected.

12. ECOLOGICAL INFORMATION

Aquatic toxicity	Fish (*Brachydanio rerio*) LC_{50} (96 hrs)>10,000 mg/L (Method: OECD 203). No acute toxicity to *Daphnia* with EL and EL_{50} ranging from >1000 to >10,000 mg/L (OECD 202).
Environmental Fate	
Persistence and degradability	The methods for determining biodegradability are not applicable to inorganic substances.
Bioaccumulation	Not expected due to physicochemical properties of the substance.
Mobility	Not expected to migrate.
Distribution to environmental compartments	No information available.
PBT and vPvB Assessment	This substance is not considered to be persistent, bioaccumulating nor toxic (PBT). This substance is not considered to be very persistent nor very bioaccumulating (vPvB).
Other adverse effects	No information available.

13. DISPOSAL CONSIDERATIONS

Disclaimer: Information in this section pertains to the product shipped in its intended composition as described in Section 3 of this MSDS. Contamination or processing may change waste characteristics and requirements. Regulations may also apply to empty containers, liners or rinsate. State/provincial and local regulations may be different from federal regulations.

Disposal consideration:	Disposal should be in accordance with applicable regional, national and local laws and regulations.

14. TRANSPORT INFORMATION

DOT

UN/ID No	Not regulated
Proper shipping name	Not regulated
Hazard class	Not regulated
Packing group	Not regulated

ICAO (air)

UN/ID No	Not regulated
Proper shipping name	Not regulated
Hazard class	Not regulated
Packing group	Not regulated

IATA

UN/ID No	Not regulated
Proper shipping name	Not regulated
Hazard class	Not regulated
Packing group	Not regulated

IMDG

UN/ID No	Not regulated
Proper shipping name	Not regulated
Hazard class	Not regulated
Packing group	Not regulated

RID

UN/ID No	Not regulated
Proper shipping name	Not regulated
Hazard class	Not regulated
Packing group	Not regulated

ADR

UN/ID No	Not regulated
Proper shipping name	Not regulated
Hazard class	Not regulated
Packing group	Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA- United States Toxic Substances Control Act Section 8(b) Inventory	Complies
DSL/NDSL- Canadian Domestic Substances List/Non-Domestic Substances List	Complies
EINECS/ELINCS- European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances	Complies
ENCS- Japan Existing and New Chemical Substances	Complies
KECL- Korean Existing and Evaluated Chemical Substances	Complies
PICCS- Philippines Inventory of Chemicals and Chemical Substances	Complies
AICS- Australian Inventory of Chemical Substances	Complies
NZIoC- New Zealand Inventory of Chemicals	Complies
TCSI- Taiwan Chemical Substance Inventory	Complies

16. OTHER INFORMATION

Pharmaceutical use: Not recommended

Food additive use: Not recommended

References: NIOSH Pocket Guide to Chemical Hazards, September 2005. "Silica, amorphous." DHHS (NIOSH) Publication No. 2005-149. National Technical Information Service, Springfield, VA. P.227

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PolyKlear FIBERGLASS + RESIN

TECHNICAL DATA SHEET

REOLOSIL FUMED SILICA

I. IDENTIFICATION AND DESCRIPTION

Product name: Reolosil Fumed Silica

Product description: A very fine amorphous silicon dioxide made by combustion of high purity silicon tetrachloride with oxygen and hydrogen. Its unique properties offer advantages in many applications: silicone rubber, sealants, organic elastomers, UPR, adhesives, paint, ink and free flow. It is used as reinforcing, thickening, anti-settling, thixotropic and free flow agent.

II. PROPERTIES

Specific surface area (BET)	190-230 m^2/g
Bulk density	50 g/L (approximately)
pH (4% suspension)	4.2
SiO_2 purity (dry basis)	> 99.9%
Cl	< 50 ppm
Al	< 20 ppm
Fe	< 20 ppm
44μm residue	< 0.01%
Moisture content (dry up, %)*1	< 1.5%

The data represents typical values (no product specification).
*1 When leaving plant

Mean primary particle size: ca. 12 nm

III. PACKAGING

Reolosil Fumed Silica is packed in 10-kg/paper bag.

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