SAFETY DATA SHEET

First issue：30th NOV, 2011
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1.IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

Product name:	Silica gel (Cobalt free mix)
Application:	Desiccant
Supplier:	Fujigel Sangyo Ltd.
Address:	2-3-2, Utsubohonmachi, Nishi-ku, Osaka 550-0004 Japan
TEL:	+81-6-6445-9501
FAX:	+81-6-6445-9502
Mail:	sales@fujigel.co.jp
Emergency telephone:	+81-6-6445-9501

2.HAZARDS IDENTIFICATION

GHS Classification:	All hazards are categorized as 'Classification not possible' or 'Not classified' at the present time.

3.COMPOSITION/INFORMATION ON INGREDIENTS

Substance or Preparation:	Preparation	
Chemical name:	Silicon dioxide	Neutral red
Synonyms:	Silicate anhydride Synthetic amorphous silica	N8,N8,3-trimethyl-2,8-phenazine diamine monohydrochloride
Chemical formula:	SiO_2	$C_{15}H_{16}N_4.ClH$
Content:	99.5% or more	0.002% or less
CAS No.:	7631-86-9	553-24-2
Class reference number in the gazetted list: (Japanese Chemical Substances Control Act)	Existing chemical substance (1)-548	Not applicable

4.FIRST-AID MEASURES

Inhalation:	Remove from exposure to fresh air immediately. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Get medical attention if cough or other symptoms appear.
Skin contact:	Flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes.

	Get medical attention if irritation develops or persists.
Eye contact:	Keep away from exposure, if exposure effect occurred. Immediately flush eyes with plenty of water for at least 15 minutes. If irritation develops, get medical attention.
Ingestion:	If conscious and alert, rinse mouth and drink milk or water. Never give anything by mouth to an unconscious person. Do not induce vomiting. Get medical attention, if swallowed amount of substance. Get medical attention, if irritation or symptoms occurred.

5.FIRE-FIGHTING MESURES

Extinguishing media:	Water spray, Dry chemical, Carbon dioxide, Appropriate foam
Special exposure hazards:	During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.
Special protective equipment for firefighters:	Wear a self-contained breathing apparatus in pressure demand, MSHA/NIOSH or EN 149 (approved or equivalent), and full protective gear.

6.ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	Avoid generating dusty conditions. Provide ventilation. Avoid inhalation and contact with skin, eyes using the appropriate protective equipment (refer to "8.EXPOSURE CONTROL/PERSONAL PROTECTION").
Environmental precautions:	Provide general or local exhaust ventilation system. Prevent entry into waterways, sewers, basements or confined areas.
Methods and material for containment and clean up:	Sweep up, and then place into a suitable container for disposal. Do not walk through spilled material.

7.HANDLING AND STORAGE

Protective measures:	Use ventilation, and wear adequate protection. (refer to "8.EXPOSURE CONTROL/PERSONAL PROTECTION"). Use with adequate ventilation (refer to "8.EXPOSURE CONTROL/PERSONAL PROTECTION").
Notices for safe handling：	Avoid ingestion and inhalation.

	Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation.
Advice on general occupational hygiene:	Wash hands thoroughly after handling.
Conditions/Materials to avoid:	Refer to "10.STABILITY AND REACTIVITY".
Conditions for safe storage:	Keep container closed when not in use. Store in a cool and dry area.
Incompatible hazardous substances:	Refer to "10.STABILITY AND REACTIVITY".
Requirements for storage vessels:	Polyethylene, other.

8.EXPOSURE CONTROL/PERSONAL PROTECTION

Administrative Control Level: (Industrial Safety and Health Act)	Not applicable	
Exposure limits/standards:	Silicon dioxide	Neutral red
JSOH:	(Class3) Respirable dust - 2mg/m^3 Total dust - 8mg/m^3	Not applicable
ACGIH:	TLV – 10 mg/m^3 (total dust)	Not applicable
NIOSH:	REL - TWA 6 mg/m^3	Not applicable
OSHA:	PEL - TWA 20 mppcf (80 mg/m^3/%SiO_2) IDHL: 3,000 mg/m^3	Not applicable
Engineering controls:	Use general and local exhaust ventilation to keep airborne concentrations of dust and fumes below the exposure limit.	
Respiratory protection:	In case of inadequate ventilation, wear appropriate respirator.	
Hand protection:	Wear appropriate gloves, if necessary.	
Eye protection:	Wear appropriate protective eyeglasses or chemical safety goggles, if necessary.	
Skin and body protection:	Wear appropriate protective clothing and face protection, if necessary.	

9.PHYSICAL AND CHEMCAL PROPERTIES

Appearance:	Solid, beads or granules, colorless or dark blue(dry)/purple(wet)	
	Silicon dioxide	Neutral red
Odor:	Odorless	No data
pH:	4-8	No data
Molecular weight:	60.1g/mol	288.8g/mol
Freezing/Melting point:	1,710℃	290℃

Boiling point:	2,230℃	No data
Flammability:	Not flammable	No data
Explosive properties:	Not explosive	No data
Vapour pressure:	None (at 20℃)	No data
Vapour density:	None	No data
Relative density:	Bulk density 0.670-0.710g/cc True specific gravity 2.20g/cc(at 20℃)	No data
Solubility:	Soluble in alkalis. Soluble in water, approximately 15~68 mg/L. (20℃, pH 5.5~6.6) (measured)	Soluble in water.
Octanol water partition coefficient (n-octanol/water):	No data	No data
Particle characteristics	No data	No data

10.STABILITY AND REACTIVITY

Chemical stability:	Stable under normal temperatures and pressures.
Possibility of hazardous reactions:	May react with strong oxidizing agent.
Condition to avoid:	Avoid dusty atmosphere.
Materials to avoid:	Magnesium, Fluorine, Oxygen difluoride, Chlorine trifluoride
Hazardous decomposition products:	Irritating and toxic fumes and gases.

11.TOXICOLOGICAL INFORMATION (Conclusion/Remarks)

	Silicon dioxide(3) (No data available for Neutral red.)
Acute toxicity:	Oral(rats, mice): LD_{50}>3,100~20,000 mg/kg bw The acute oral administration of this material failed to produce signs of toxicity or deaths in treated animals with LD_{50} values greater than the top doses applied, either by gavage. Dermal(rabbits): LD_{50}>5,000 mg/kg bw No signs of systemic or organ toxicity were noted. There were only very slight transient erythemas (Draize score 1) at the site of treatment in solitary animals. Inhalation(rats):LC_{50}>140～2,000mg/m^3 Inhalation exposure of rats to the highest technically feasible concentrations, no lethal effects were observed.
Skin corrosion/irritation:	This material is not skin irritating in experimental studies on rabbits.
Serious eye damage/irritation:	This material tested as a powder (0.1 g) has shown no or only weak and transient irritating effects on the conjunctivae of the eyes of

	rabbits with the iris and cornea not affected at all.
Respiratory or skin sensitization:	Medical surveillance records on workers gave no evidence of skin sensitization over decades of practical experience. Given the inherent physicochemical properties and ubiquitous nature of this class of compounds, there is no structural alert to indicate a sensitizing potential.
Germ cell mutagenicity:	In vitro Bacterial *Salmonella* and *E. coli* reverse mutation assays, cytogenetic mammalian cell systems including chromosomal aberration in human embryonic lung cells (Wi-38) and Chinese hamster ovary (CHO) cells, gene mutation assay in mammalian cells, HGPRT assay in CHO cells, DNA repair system and UDS test in primary rat hepatocytes - Negative In vivo Cytogenetic assay and lethal assay in rats - Negative A valid cytogenetic assay in rats failed to demonstrate an increase in chromosomal aberrations in bone-marrow cells from rats treated with single and fivefold oral synthetic amorphous silica or silicate doses as high as 5000 mg/kg bw per treatment. Likewise, a wellperformed dominant lethal assay conducted in rats did not produce significant adverse effects on reproductive performance parameters after exposure of male rats to both synthetic amorphous silica and silicates, respectively, under above-mentioned exposure conditions.
Carcinogenicity:	Based on the negative results after long-term oral administration of synthetic amorphous silica (up to 5 % in the diet given to rats and mice), there is no evidence of a carcinogenic potential arising from ingestion. This substance is classified group3 (Not classifiable as to its carcinogenic) by IARC.(2)
Reproductive toxicity:	The experimental data on intra-uterine development gained in four animal species (rat, mouse, hamster and rabbit) across all three types of synthetic amorphous silica and silicates allow the conclusion that there is no potential for adverse effects on embryonal/foetal development arising from oral exposure to these silica/silicates. The NOEL for maternal and developmental toxicity is the highest tested

	dose of 1,600 mg/kg bw/d.
STOT-single exposure:	Not available
STOT-repeated exposure:	In another feeding study, male and female CD-1 rats received *Syloid 244*, an amorphous silica gel, at dietary levels of 3.2 and 10% for 6 months, corresponding to average doses of 2,170~2,420 and 7,950~8,980mg/kg bw. Likewise, no treatment-related findings were noted. Isolated pathological findings were unrelated to dosing and common in untreated rats. No histopathological changes were observed in the kidneys and reproductive organs.
Aspiration hazard:	No data

12.ECOLOGICAL INFORMATION

	Silicon dioxide[3] (No data available for Neutral red.)
Acute toxicity:	Fish: *Brachydanio rerio* 96h-LL_0=10,000mg/L Crustacea: *Daphnia magna* 24h-LC_{50}>10,000mg/L (limit test)
Chronic toxicity:	There are no chronic aquatic toxicity data, but due to the known inherent physico-chemical properties, absence of acute toxic effects as well as the ubiquitous presence of silica/silicates in the environment, there is no evidence of harmful long-term effects arising from exposure to synthetic amorphous silica/silicates.
Persistence and degradability:	Based on the chemical nature of silica and silicates (inorganic structure and chemical stability of the compound: Si-O bond is highly stable), no photo- or chemical degradation is expected. Biodegradation is not applicable to these inorganic substances.
Biological concentration:	No data
Mobility in Soil:	No data
Hazardous to ozone layer:	No data

13.DISPORSAL CONSIDERATIONS

Residue/A pollution container and packing :	Dispose in accordance with all applicable and local regulations. Disposal to licensed disposal site in local waste disposal authority. Dispose of container in accordance with all applicable and local regulations, or recycling after cleaning up if possible.

14.TRANSPORT INFORMATION

International regulation:	This product is not classified as hazardous for transport. (ADR, RID, UN, IMO, ICAO/IATA)
Domestic regulation:	This product is not classified as hazardous for transport.
Safety precautions:	For transportation, load containers in good condition without damages, corrosion and leaks. Keep away from water.

15.REGULATORY INFORMATION

Not applicable

16.OTHER INFORMATION

Information source and references:

(1) IARC Monographs on the Evaluation of Carcinogenic Risks to Humans Volume 68 (1997)
(2) NIOSH Pocket Guide to Chemical Hazards (http://www.cdc.gov/niosh/npg/npgd0552.html)
(3) Organization for Economic Co-operation and Development (OECD) Screening Information Data Set (SIDS) Initial Assessment Report for SIAM19 (2004)
(4) Recommendation of Occupational Exposure Limits (Japanese Society of Occupational Health, 2008)
(5) TLVs and BELs (AGCIH, 2004)

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REVISION COMMENT

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