SAFETY DATA SHEET

1. Identification

Product identifier **KS-609**

Other means of identification

Sales Code 1027S0

Recommended use of the chemical and restrictions on use

Recommended use Greases and fluid compounds
Thermal interface

Recommended restrictions Industrial use only.

Manufacturer/Importer/Supplier/Distributor information

MANUFACTURER

COMPANY NAME Shin-Etsu Chemical Co., Ltd.
CONTACT Quality Assurance Department（Gunma Complex）
ADDRESS 13-1, Isobe 2-chome, Annaka-shi, Gunma 379-0195, JAPAN
TELEPHONE NUMBER +81(0)27-385-2172
FAX NUMBER +81(0)27-385-2753

SUPPLIER

COMPANY NAME Shin-Etsu Singapore PTE Ltd.
ADDRESS 1 Kim Seng Promenade #15-05/06 Great World City, Singapore 237994
TELEPHONE NUMBER +65-6743-7277
EMERGENCY +65-6743-7277

2. Hazards identification

GHS classification

Physical hazards	Not classified.	
Health hazards	Not classified.	
Environmental hazards	Hazardous to the aquatic environment, acute hazard	Category 1
	Hazardous to the aquatic environment, long-term hazard	Category 1

*Hazards not stated here are "Not classified", "Not applicable" or "Classification not possible".

GHS label elements, including precautionary statements

Pictograms

Signal word Warning

Hazard statements Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

Precautionary statement

Prevention Avoid release to the environment.

Response Collect spillage.

Storage Not available.

Disposal Dispose of contents/container in accordance with local/regional/national/international regulations.

Other hazards which do not result in classification None known.

Supplemental information None.

3. Composition/information on ingredients

Substance or mixture Mixture

Chemical name	Common name and synonyms	CAS Number	Concentration (%)
Zinc oxide		1314-13-2	70 - 80

4. First-aid measures

Inhalation Not applicable.

Skin contact Wash skin with soap and water. Get medical attention if irritation develops and persists.

Eye contact Rinse immediately with plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists.

Ingestion Rinse mouth. Get medical attention immediately.

Most important symptoms/effects, acute and delayed Not available.

Indication of immediate medical attention and special treatment needed Treat symptomatically.

General information Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media None known.

Specific hazards arising from the chemical By heating and fire, harmful vapors/gases may be formed.

Fire fighting equipment/instructions Move containers from fire area if you can do so without risk. Water runoff can cause environmental damage.

Special protective equipment and precautions for firefighters Firefighters must use standard protective equipment including flame retardant coat, helmet, gloves, rubber boots, and self-contained breathing apparatus.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Local authorities should be advised if significant spillages cannot be contained. Ensure adequate ventilation. Wear appropriate personal protective equipment.

Environmental precautions Prevent further leakage or spillage if safe to do so. Avoid release to the environment.

Methods and materials for containment and cleaning up Eliminate sources of ignition. Collect spillage. Dike far ahead of spill for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills in original containers for re-use.

7. Handling and storage

Precautions for safe handling Provide adequate ventilation. Use adequate ventilation when this product is heated at approximately 150 °C (300 °F) and above in the presence of air. Use care in handling/storage. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities Keep container tightly closed. Store in a cool, dry place out of direct sunlight. Store away from incompatible materials (see Section 10 of the SDS). Keep in original container.

8. Exposure controls/personal protection

Occupational exposure limits

Singapore. PELs. (Workplace Safety and Health (Permissible Exposure Levels of Toxic Substances) Order)

Components	Type	Value	Form
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Fume.
	TWA	5 mg/m3	Fume.
		10 mg/m3	Dust.

Control parameters/Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Zinc oxide (CAS 1314-13-2)	STEL	10 mg/m3	Respirable fraction.
	TWA	2 mg/m3	Respirable fraction.

Exposure guidelines Occupational Exposure Limits are not relevant to the current physical form of the product.

Appropriate engineering control measures	Provide adequate general and local exhaust ventilation. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear protective gloves.
Other	Wear suitable protective clothing.
Respiratory protection	If ventilation is insufficient when heating use chemical respirator with organic vapor cartridge.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Wash hands before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice. This product can generate formaldehyde at approximately 150 °C (300 °F) and above in the presence of air. Formaldehyde is a skin and respiratory sensitizer, eye and throat irritant, acute toxicant and potential cancer hazard. So, use adequate ventilation or wear protective equipment such as gloves, goggles, organic vapor respirator or protective clothing when this product is heated at approximately 150 °C (300 °F) and above in the presence of air.

9. Physical and chemical properties

Appearance	
Physical state	Solid.
Form	Grease
Color	Milk-white
Odor	Odorless
Odor threshold	Not available.
pH	Not measurable (Refer to water solubility)
Melting point/freezing point	No data
Initial boiling point and boiling range	Not applicable
Flash point	> 212 °F (> 100 °C) Closed Cup
Evaporation rate	Negligible (Butyl Acetate=1)
Flammability (solid, gas)	Not applicable.
Explosive limit - lower (%)	No data
Explosive limit - upper (%)	No data
Vapor pressure	Negligible (25 °C)
Vapor density	Not applicable
Relative density	2.5 (25 °C)
Solubility(ies)	
Solubility (water)	Not soluble
Partition coefficient (n-octanol/water)	Not applicable
Auto-ignition temperature	No data
Decomposition temperature	Not available.
Viscosity	Not applicable

10. Stability and reactivity

Reactivity	No hazardous reaction known under normal conditions of use, storage and transport.
Chemical stability	Stable at normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Not available.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	Thermal breakdown of this product during fire or very high heat condition may evolve the following hazardous decomposition product: Carbon oxides and traces of incompletely burned carbon compounds. Silicon dioxide. Formaldehyde .

11. Toxicological information

Information on likely routes of exposure

Inhalation	No significant effects are expected.
Skin contact	No significant effects are expected.
Eye contact	No significant effects are expected.
Ingestion	No significant effects are expected.

Acute toxicity

Components	Species	Test Results
Zinc oxide (CAS 1314-13-2)		
Acute		
Inhalation		
LC50	Mouse	> 5.7 mg/l, 4 Hours
Oral		
LD50	Mouse	7950 mg/kg
	Rat	> 5 g/kg

Symptoms	Not available.
Skin corrosion/irritation	Not available.
Serious eye damage/eye irritation	Not available.
Respiratory or skin sensitization	
Respiratory sensitization	Not available.
Skin sensitization	Not available.
Germ cell mutagenicity	Not available.
Carcinogenicity	Not available.
Reproductive toxicity	Not available.
Specific target organ toxicity - single exposure	Not available.
Specific target organ toxicity - repeated exposure	Not available.
Aspiration hazard	Not applicable.
Chronic effects	Not available.
Other information	This product can generate formaldehyde at approximately 150 °C (300 °F) and above in the presence of air. Formaldehyde is a skin and respiratory sensitizer, eye and throat irritant, acute toxicant and potential cancer hazard. So, use adequate ventilation or wear protective equipment such as gloves, goggles, organic vapor respirator or protective clothing when this product is heated at approximately 150 °C (300 °F) and above in the presence of air.

12. Ecological information

Ecotoxicity Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects. [Zinc oxide]

Components		Species	Test Results
Zinc oxide (CAS 1314-13-2)			
Aquatic			
Crustacea	LC50	Water flea (Daphnia magna)	0.122 mg/l, 48 hours

Persistence and degradability	No data available.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Mobility in general	No data available.
Other adverse effects	Not available.

13. Disposal considerations

Disposal methods/information Incinerate. Incinerator should be appropriately equipped for silica and other fine powder which the product will generate in incineration. Workers should wear appropriate personal protective equipment(s) such as respirator. Contract with a disposal operator licensed by the Law on Disposal and Cleaning. Do not allow this material to drain into sewers/water supplies. Dispose of contents/container in accordance with local/regional/national/international regulations.

Special precautions Not available.

14. Transport information

ADR

- **UN number** UN3077
- **UN proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc oxide)
- **Transport hazard class(es)**
  - **Class** 9
  - **Subsidiary risk** -
  - **Label(s)** 9
  - **Hazard No. (ADR)** 90
  - **Tunnel restriction code** E
- **Packing group** III
- **Environmental hazards** Yes
- **Special precautions for user** Not available.

IATA

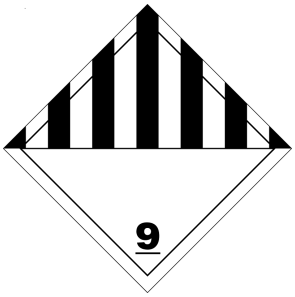
- **UN number** UN3077
- **UN proper shipping name** Environmentally hazardous substance, solid, n.o.s. (Zinc oxide)
- **Transport hazard class(es)**
  - **Class** 9
  - **Subsidiary risk** -
- **Packing group** III
- **Environmental hazards** Yes
- **ERG Code** 9L
- **Special precautions for user** Not available.
- **Other information**
  - **Passenger and cargo aircraft** Allowed with restrictions.
  - **Cargo aircraft only** Allowed with restrictions.

IMDG

- **UN number** UN3077
- **UN proper shipping name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Zinc oxide)
- **Transport hazard class(es)**
  - **Class** 9
  - **Subsidiary risk** -
- **Packing group** III
- **Environmental hazards**
  - **Marine pollutant** Yes
- **EmS** F-A, S-F
- **Special precautions for user** Not available.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code This product is not intended to be transported in bulk.

ADR; IATA; IMDG



Marine pollutant

General information IMDG Regulated Marine Pollutant. Sealed packets and articles containing less than 10 ml of an environmentally hazardous liquid, or containing less than 10 g of an environmentally hazardous solid are not regulated as dangerous goods.

15. Regulatory information

Safety, health and environmental regulations specific for the product in question

Prior Informed Consent (PIC) Substances (Environment Protection and Management Act, 2nd Schedule, Part 1, Jul. 1, 2013)

Not regulated.

Chemical Weapons Prohibition (Act)

Not applicable.

Environmental Protection and Management (Hazardous Substances) Regulations

Not applicable.

Environmental Public Health Act

Not applicable.

Misuse of Drugs Act

Controlled Narcotic Drugs (Misuse of Drugs Act, First Schedule, Part I, II & III, as amended)

Not regulated.

Drug Precursors (Misuse of Drugs Act, Third Schedule, Parts I & II, as amended)

Not regulated.

Controlled Specified Drugs (Misuse of Drugs Act, Fourth Schedule, as amended)

Not regulated.

Temporarily Listed Drugs (Misuse of Drugs Act, Fifth Schedule, as amended)

Not regulated.

International regulations

Montreal Protocol

Not applicable.

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Basel Convention

Not applicable.

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Industrial Chemicals (AICIS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes

Country(s) or region	Inventory name	On inventory (yes/no)*
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	Yes
Taiwan	Taiwan Chemical Substance Inventory (TCSI)	Yes
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

References

HSDB® - Hazardous Substances Data Bank
IARC Monographs. Overall Evaluation of Carcinogenicity
National Toxicology Program (NTP) Report on Carcinogens
ACGIH Documentation of the Threshold Limit Values and Biological Exposure Indices
NLM: Hazardous Substances Data Base
European Chemicals Agency's dissemination website for registered substances
SS 586: Specification for hazard communication for hazardous chemicals and dangerous goods. - Part 3: Preparation of safety data sheets (SDS)
Part 3 of Annex VI to Regulation (EC) No. 1272/2008
Chemical Risk Information Platform (CHRIP) provided by National Institute of Technology and Evaluation
C&L Inventory maintained by European Chemicals Agency

Disclaimer

This information is offered in good faith as typical values and not as a product specification. No warranty, expressed or implied, is hereby made. The recommended industrial hygiene and safe handling procedures are believed to be generally applicable. However, each user should review these recommendations in the specific context of the intended use and determine whether they are appropriate.
This product has been designed, manufactured and developed solely for general industrial use only. This product is not designed for, intended for use as, or suitable for, medical, surgical or other particular purposes. Users have the sole responsibility and obligation to determine the suitability of this product for any application, to make preliminary tests, and to confirm the safety of this product for their use. Users must never use this product for the purpose of implantation into the human body and/or injection into humans.

Issue date

07-13-2023

Key/legend

Not applicable.

Revision information

Product and Company Identification: Product and Company Identification
Composition / Information on Ingredients: Disclosure Overrides
Physical & Chemical Properties: Multiple Properties
Toxicological Information: Toxicological Data
Transport Information: Proper Shipping Name/Packing Group
Regulatory Information: Risk Phrases - Class.
HazReg Data: Pacific Rim
GHS: Classification