



SAFETY DATA SHEET

1. Identification

Product identifier KBE-903

Other means of identification

Sales Code 1481S0

Recommended use of the chemical and restrictions on use

Recommended use Silanes, Silane coupling agents
Synthetic resin modifier,
Treatment for composite materials (enhanced function, higher quality),
Surface treatment agent,
Filler treatment agent

Recommended restrictions Industrial use only.

Manufacturer/Importer/Supplier/Distributor information

MANUFACTURER

COMPANY NAME Shin-Etsu Chemical Co., Ltd.
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SUPPLIER

COMPANY NAME Shin-Etsu Singapore PTE Ltd.
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2. Hazards identification

GHS classification

Physical hazards Not classified.
Health hazards Acute toxicity, oral Category 4
Skin corrosion/irritation Category 1
Serious eye damage/eye irritation Category 1
Sensitization, skin Category 1B
Environmental hazards Not classified.

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

GHS label elements, including precautionary statements

Pictograms



Signal word

Danger

Hazard statements

Harmful if swallowed. Causes severe skin burns and eye damage. Causes serious eye damage. May cause an allergic skin reaction.

Precautionary statements

Prevention

Do not breathe dust/fume/gas/mist/vapors/spray. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Contaminated work clothing should not be allowed out of the workplace.

Response

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with plenty of soap and water. If skin irritation or rash occurs: Get medical advice/attention. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician. Take off contaminated clothing and wash it before reuse.

Storage	Store locked up.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Other hazards which do not result in classification	In the case of contact with eyes, rinse with plenty of water and seek immediately medical advice. This product slowly reacts with water, acids or bases to evolve following compounds: Ethanol
Supplemental information	None.

3. Composition/information on ingredients

Substance or mixture	Substance		
Chemical name	Common name and synonyms	CAS Number	Concentration (%)
3-Aminopropyltriethoxysilane		919-30-2	90 - 100
Ethanol(Impurity)		64-17-5	< 0.2

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
Skin contact	Remove contaminated clothing immediately and wash skin with soap and water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Eye contact	Rinse immediately with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion	Rinse mouth. Do not induce vomiting. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention immediately.
Most important symptoms/effects, acute and delayed	Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.
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	Foam. Dry chemical powder. Carbon dioxide (CO ₂).
Unsuitable extinguishing media	Water.
Specific hazards arising from the chemical	By heating and fire, harmful vapors/gases may be formed. Nitrogen oxides. (corrosive)
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. Do not touch or walk through spilled material. 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. Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Prevent entry into waterways, sewer, basements or confined areas. Small Spills: 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 care in handling/storage. Do not breathe mist or vapor. Do not get in eyes, on skin, or on clothing. Avoid prolonged exposure. When using, do not eat, drink or smoke. Wear appropriate personal protective equipment. Wash hands thoroughly after handling. Avoid release to the environment. Do not empty into drains.

Conditions for safe storage, including any incompatibilities Store locked up. Keep container tightly closed. Keep out of the reach of children. Store in a cool, dry place out of direct sunlight. 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
Ethanol(Impurity) (CAS 64-17-5)	TWA	1880 mg/m ³
		1000 ppm

Control parameters/Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value
Ethanol(Impurity) (CAS 64-17-5)	STEL	1000 ppm

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 goggles/face shield.

Skin protection

Hand protection Wear appropriate chemical resistant gloves.

Other Wear appropriate chemical resistant clothing.

Respiratory protection Chemical respirator with organic vapor cartridge.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product. Contaminated work clothing should not be allowed out of the workplace. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Form Liquid.

Color Colorless. Clear. Light yellow, transparent

Odor Amine odor

Odor threshold Not available.

pH No data

Melting point/freezing point Not measured

Initial boiling point and boiling range 422.6 °F (217 °C)

Flash point 208.4 °F (98 °C) Open Cup
203 °F (95 °C) Closed Cup

Evaporation rate < 1 (Butyl Acetate=1)

Flammability (solid, gas) Not applicable.

Flammability limit - lower (%) No data

Flammability limit - upper (%) No data

Explosive limit - lower (%) Not available.

Explosive limit - upper (%) Not available.

Vapor pressure < 1.3 kPa (25 °C)

Vapor density 7.6 (air=1)

Relative density Not available.

Solubility(ies)

Solubility (water)	Soluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	> 392 °F (> 200 °C)
Decomposition temperature	Not available.
Viscosity	1.7 mm ² /s (25 °C)
Other data	
Specific gravity	0.94 (25 °C)

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. Water, acids or alkalis.
Hazardous decomposition products	This product slowly reacts with water, acids or bases to evolve following compounds: Ethanol 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. Nitrogen oxides.

11. Toxicological information**Information on likely routes of exposure**

Inhalation	May cause irritation to the respiratory system.
Skin contact	Causes severe skin burns. May cause an allergic skin reaction.
Eye contact	Causes serious eye damage.
Ingestion	Causes digestive tract burns. Harmful if swallowed.
Acute toxicity	Harmful if swallowed. May cause an allergic skin reaction.

Components	Species	Test Results
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3-Aminopropyltriethoxysilane (CAS 919-30-2)

Acute**Dermal**

LD50	Rabbit	4290 mg/kg
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Oral

LD50	Rat	1570 - 3650 mg/kg
		1780 mg/kg

Ethanol(Impurity) (CAS 64-17-5)

Acute**Inhalation**

LC50	Mouse	39 mg/l, 4 Hours
	Rat	20000 ppm, 10 Hours

Oral

LD50	Guinea pig	5.6 g/kg
	Mouse	3450 mg/kg
	Rat	6.2 g/kg

Symptoms

Burning pain and severe corrosive skin damage. Causes serious eye damage. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result.

Skin corrosion/irritation

SKIN-RABBIT : 5mg/24Hr SEVERE

Serious eye damage/eye irritation

EYE-RABBIT : 0.75mg/24Hr SEVERE
Causes serious eye irritation. [Ethanol]

Respiratory or skin sensitization

Respiratory sensitization	Not available.
Skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	Negative(Ames Test)
Reproductive toxicity	Not available.
Specific target organ toxicity - single exposure	Not available.
Specific target organ toxicity - repeated exposure	Not available.
Aspiration hazard	Not available.
Chronic effects	Not available.
Other information	This product slowly reacts with water, acids or bases to evolve following compounds: Ethanol

12. Ecological information**Ecotoxicity**

Components	Species	Test Results
3-Aminopropyltriethoxysilane (CAS 919-30-2)		
Aquatic		
Fish	LC50	Oryzias latipes > 1000 mg/l, 48 hr
Ethanol(Impurity) (CAS 64-17-5)		
Aquatic		
Crustacea	EC50	Water flea (Daphnia magna) 7.7 - 11.2 mg/l, 48 hours
Fish	LC50	Fathead minnow (Pimephales promelas) > 100 mg/l, 96 hours
Persistence and degradability	Causes easily hydrolysis in water or atmosphere.	
Bioaccumulative potential	No data available.	
Mobility in soil	No data available.	
Mobility in general		
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	UN3267
UN proper shipping name	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (3-aminopropyltriethoxysilane)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Label(s)	8
Hazard No. (ADR)	80
Tunnel restriction code	E
Packing group	II
Environmental hazards	No.
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number	UN3267
UN proper shipping name	Corrosive liquid, basic, organic, n.o.s. (3-aminopropyltriethoxysilane)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II

Environmental hazards	No.
ERG Code	8L
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
Other information	
Passenger and cargo aircraft	Allowed with restrictions.
Cargo aircraft only	Allowed with restrictions.

IMDG

UN number	UN3267
UN proper shipping name	CORROSIVE LIQUID, BASIC, ORGANIC, N.O.S. (3-aminopropyltriethoxysilane)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	II
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.
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**15. Regulatory information****Safety, health and environmental regulations specific for the product in question****Controlled Narcotic Drugs (Misuse of Drugs Act, First Schedule, Part I, II & III)**

Not regulated.

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

Not regulated.

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.

Montreal Protocol

Not applicable.

Stockholm Convention

Not applicable.

Rotterdam Convention

Not applicable.

Kyoto protocol

Not applicable.

Basel Convention

Not applicable.

International regulations

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	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
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	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

04-14-2015

Revision date

11-21-2016

Key/legend

Not applicable.

Revision information

This document has undergone significant changes and should be reviewed in its entirety.