

Safety Data Sheet**Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride**

Version : V1.0.0.2

Report No. : HGNM20314I

Creation Date : 2016/04/07

Revision Date : 2020/01/07

Prepared according to UN GHS (the 8th revised edition)*1 Identification of the chemical and supplier****Product identifier**

Product Name	Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride
CAS No.	Not applicable
EC No.	Not applicable
Molecular Formula	Not applicable

Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Antimicrobial and Antifungus.
Uses advised against	No special note.

Details of the supplier of the Safety Data Sheet

Name of the company	HVAC ENGINEERING SERVICES PTE LTD.
Address of the company	#03-02, 28 SENANG CRESCENT SINGAPORE 416601.
Post code	—
Telephone number	+65 6246 1107
Website	www.hvacengineering.com.sg
E-mail address	sales@hvacengineering.com.sg

Emergency phone number

Emergency phone number	+65 83285371
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2 Hazards identification**Hazard classification according to GHS**

Flammable Liquids	Category 2
Skin Corrosion/Irritation	Category 2
Serious Eye Damage/Irritation	Category 2
Specific Target Organ Toxicity (Single Exposure)	Category 3
Hazardous To The Aquatic Environment – Short-Term (Acute) Hazard	Category 1
Hazardous To The Aquatic Environment – Long-Term (Chronic) Hazard	Category 1

Label elements

Hazard pictograms	
Signal word	Danger

Hazard statements

H225	Highly flammable liquid and vapour
H315	Causes skin irritation
H319	Causes serious eye irritation
H336	May cause drowsiness or dizziness
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

Precautionary statements

Prevention

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P233	Keep container tightly closed.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting] equipment.
P242	Use non-sparking tools.
P243	Take action to prevent static discharges.
P261	Avoid breathing gas/mist/vapours/spray.
P264	Wash face and hands thoroughly after handling.
P272	Contaminated work clothing should not be allowed out of the workplace.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

P319	Get medical help if you feel unwell.
P321	Specific treatment (see related instructions on this label).
P391	Collect spillage.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P332+P317	If skin irritation occurs: Get medical help.
P337+P317	If eye irritation persists: Get medical help.
P362+P364	Take off contaminated clothing and wash it before reuse.
P370+P378	In case of fire: Use appropriate extinguishing media mentioned in Section 5 of the SDS to extinguish.
P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower].
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Storage

P405	Store locked up.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Store in a well-ventilated place. Keep cool.

Disposal

P501	Dispose of contents/container in accordance with local/regional/national/international regulations.
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Hazard description

Physical and chemical hazards

	Highly flammable liquids, its vapor and air mixture can form explosive mixture.
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Health hazards

Inhaled	Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of coordination, and vertigo.
Ingestion	Accidental ingestion of the product may be harmful to the health of the individual.
Skin Contact	The product can cause skin irritation following direct contact with the skin.
Eye	This product may cause serious eye irritation. Severe inflammation may be expected with pain following direct contact with the eye.

Environmental hazards

	This product is very toxic to aquatic life with long lasting effects. Please refer to 12th chapter of SDS.
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3 Composition/information on ingredients

Component	Cas No.	EC No.	Concentration (weight percent, %)
Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride	27668-52-6	248-595-8	<1.5%
Isopropanol	67-63-0	200-661-7	<1.5%
3-Chloropropyltrimethoxysilane	2530-87-2	219-787-9	<1.5%

4 First aid measures

Description of first aid measures

General advice	Immediate medical attention is required. Show this safety data sheet (SDS) to the doctor in attendance.
Eye contact	Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.
Skin contact	Take off contaminated clothing and shoes immediately. Wash off with plenty of water for at least 15 minutes and consult a physician if feel uncomfortable.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. Call a physician or Poison Control Center immediately.
Inhalation	Move victim into fresh air. If breathing is difficult, give oxygen. Do not use mouth to mouth resuscitation if victim ingested or inhaled the substance. If not breathing, give artificial respiration and consult a physician immediately.
Protecting of first-aiders	Ensure that medical personnel are aware of the substance involved. Take precautions to protect themselves and prevent spread of contamination.

Most important symptoms and effects, both acute and delayed

1	Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
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Indication of any immediate medical attention and special treatment needed

1	Treat symptomatically.
2	Symptoms may be delayed.

5 Firefighting measures**Extinguishing media**

Suitable extinguishing media	Small Fire : Dry chemical, CO ₂ water spray or alcohol-resistant foam; Large Fire : Water spray, fog or alcohol-resistant foam.
Unsuitable extinguishing media	Do not use a solid water stream as it may scatter or spread fire.

Specific hazards arising from the substance or mixture

1	Will form explosive mixtures with air.
2	Fire exposed containers may vent contents through pressure relief valves thereby increasing fire intensity and/ or vapour concentration.
3	Vapours may travel to source of ignition and flash back.
4	Liquid and vapour are flammable.
5	Development of hazardous combustion gases or vapor possible in the event of fire.
6	May expansion or decompose explosively when heated or involved in fire.

Advice for firefighters

1	As in any fire, wear self-contained breathing apparatus (MSHA/NIOSH approved or equivalent) and full protective gear.
2	Fight fire from a safe distance, with adequate cover.
3	Prevent fire extinguishing water from contaminating surface water or the ground water system.
4	Use water delivered as a fine spray to control fire and cool adjacent area.
5	Cool closed containers exposed to fire with water spray.

6 Accidental release measures**Personal precautions, protective equipment and emergency procedures**

1	Avoid breathing vapours and contacting with skin and eye.
2	Beware of vapours accumulating to form explosive concentrations.
3	Vapours can accumulate in low areas.
4	Emergency personnel wear positive pressure self-contained breathing apparatus. Wear protective and anti-static clothing. Wear chemical impermeable gloves.
5	Ensure adequate ventilation. Remove all sources of ignition. Take precautionary measures against static discharges.
6	Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.
7	Use personal protective equipment. Avoid breathing vapours, mist or gas.

Environmental precautions

1	Prevent further leakage or spillage if safe to do so.
2	Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

1	Absorb spilled material in dry sand or inert absorbent. In case of large amount of spillage, contain a spill by bunding.
2	Adhered or collected material should be promptly disposed of, in accordance with appropriate laws and regulations.

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| 3 | Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. |
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7 Handling and storage

Precautions for handling

1	Avoid inhalation of vapors.
2	Use only non-sparking tools.
3	To prevent fire caused by electrostatic discharge steam, equipment on all metal parts should be grounded.
4	Use explosion proof equipment.
5	Handling is performed in a well ventilated place.
6	Wear suitable protective equipment.
7	Avoid contact with skin and eyes.
8	Keep away from heat/sparks/open flames/ hot surfaces.

Precautions for storage

1	Keep containers tightly closed.
2	Keep containers in a dry, cool and well-ventilated place.
3	Keep away from heat/sparks/open flames/hot surfaces.
4	Store away from incompatible materials and foodstuff containers.

8 Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

Component	Country/Region	Limit value - Eight hours		Limit value - Short term	
		ppm	mg/m ³	ppm	mg/m ³
Isopropanol 67-63-0	USA - OSHA	400	980	-	-
	South Korea	200	480	400	980
	Ireland	200	-	400	-
	Germany (AGS)	200	500	400	1000
	Denmark	200	490	400	980
	Australia	400	983	500	1230

Biological limit values

Biological limit values	No relevant regulations
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Monitoring methods

1	EN 14042 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents.
2	GBZ/T 160.1~GBZ/T 160.81-2004 Determination of toxic substances in workplace air (Series standard)

Engineering controls

1	Ensure adequate ventilation, especially in confined areas.
2	Ensure that eyewash stations and safety showers are close to the workstation location.

3	Use explosion-proof electrical/ventilating/lighting/equipment.
4	Set up emergency exit and necessary risk-elimination area.
5	Handle in accordance with good industrial hygiene and safety practice.

Personal protection equipment

General requirement	
Eye protection	Tightly fitting safety goggles (approved by EN 166(EU) or NIOSH (US)).
Hand protection	Wear protective gloves (such as butyl rubber), passing the tests according to EN 374(EU), US F739 or AS/NZS 2161.1 standard.
Respiratory protection	If exposure limits are exceeded or if irritation or other symptoms are experienced, use a full-face respirator with multi-purpose combination (US) or type AXBEK (EN 14387) respirator cartridges.
Skin and body protection	Wear fire/flame resistant/retardant clothing and antistatic boots.

9 Physical and chemical properties

Physical and chemical properties

Appearance	Light yellow to amber liquid
Odor	Product specific
Odor threshold	No information available
pH	5~7.5
Melting point/freezing point(°C)	No information available
Initial boiling point and boiling range(°C)	> 35
Flash point(Closed cup, °C)	< 23
Evaporation rate	No information available
Flammability	Highly flammable
Upper/lower explosive limits[%(v/v)]	Upper limit : No information available ; Lower limit : No information available
Vapor pressure	No information available
Relative vapour density(Air = 1)	No information available
Relative density(Water=1)	No information available
Solubility(mg/L)	Soluble in water
n-octanol/water partition coefficient	No information available
Auto-ignition temperature(°C)	No information available
Decomposition temperature(°C)	No information available
Kinematic viscosity	No information available
Particle characteristics	Not applicable

10 Stability and reactivity

Stability and reactivity

Reactivity	Contact with incompatible substances can cause decomposition or other chemical reactions.
Chemical stability	Stable under proper operation and storage conditions.
Possibility of hazardous reactions	In contact with oxidants causes severe reactions, and may cause a fire or explosion.
Conditions to avoid	Incompatible materials, heat, flame and spark.
Incompatible materials	Oxidants, alkali metals, alkaline earth metals and aluminum.
Hazardous decomposition products	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

11 Toxicological information**Acute toxicity**

Component	Cas No.	LD ₅₀ (oral)	LD ₅₀ (dermal)	LC ₅₀ (inhalation,4h)
Isopropanol	67-63-0	5045mg/kg(Rat)	12800mg/kg(Rabbit)	No information available

Carcinogenicity

ID	Cas No.	Component	IARC	NTP
1	27668-52-6	Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride	Not Listed	Not Listed
2	67-63-0	Isopropanol	Category 3	Not Listed
3	2530-87-2	3-Chloropropyltrimethoxysilane	Not Listed	Not Listed

Others

Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride	
Skin corrosion/irritation	Causes skin irritation(Category 2)
Serious eye damage/irritation	Causes serious eye irritation(Category 2)
Skin sensitization	Based on available data, the classification criteria are not met
Respiratory sensitization	Based on available data, the classification criteria are not met
Reproductive toxicity	Based on available data, the classification criteria are not met
STOT-single exposure	May cause drowsiness or dizziness(Category 3)
STOT-repeated exposure	Based on available data, the classification criteria are not met
Aspiration hazard	Based on available data, the classification criteria are not met
Germ cell mutagenicity	Based on available data, the classification criteria are not met
Reproductive toxicity(additional)	Based on available data, the classification criteria are not met

12 Ecological information**Acute aquatic toxicity**

Component	Cas No.	Fish	Crustaceans	Algae
Isopropanol	67-63-0	LC ₅₀ : 9640mg/L (96h)(Fish)	EC ₅₀ : >1000mg/L (48h)(Crustaceans)	ErC ₅₀ : >1000mg/L (72h)(Algae)

Chronic aquatic toxicity

Component	Cas No.	Fish	Crustaceans	Algae
Isopropanol	67-63-0	No information available	NOEC : >100mg/L (Crustaceans)	NOEC : 1000mg/L (Algae)

Persistence and degradability

Component	Cas No.	Persistence (water/soil)	Persistence (air)
Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride	27668-52-6	Low	Low
3-Chloropropyltrimethoxysilane	2530-87-2	High	High

Bioaccumulative potential

Component	Cas No.	Bioaccumulative potential	comments
Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride	27668-52-6	Low	BCF=10
3-Chloropropyltrimethoxysilane	2530-87-2	Low	Log Kow=0.5646

Mobility in soil

Component	Cas No.	Mobility in soil	Soil Organic Carbon-Water Partitioning Coefficient (K _{oc})
Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride	27668-52-6	High	1
3-Chloropropyltrimethoxysilane	2530-87-2	Low	2577

Results of PBT and vPvB assessment

Component	Cas No.	Results of PBT and vPvB assessment (according to (EC) No 1907/2006)
Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride	27668-52-6	not PBT/vPvB
Isopropanol	67-63-0	not PBT/vPvB
3-Chloropropyltrimethoxysilane	2530-87-2	not PBT/vPvB

13 Disposal considerations

Disposal considerations

Waste chemicals	Before disposal should refer to the relevant national and local laws and regulation. Recommend the use of incineration disposal.
Contaminated packaging	Containers may still present chemical hazard when empty. Keep away from hot and ignition source of fire. Return to supplier for recycling if possible.
Disposal recommendations	Refer to section waste chemicals and contaminated packaging.

14 Transport information

Label and Mark

Transporting Label	
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Marine pollutant	
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IMDG-CODE

UN number	1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains Isopropanol and Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride)
Transport hazard class	3
Transport subsidiary hazard class	None
Packing group	II
Special provisions	274
Limited quantities	1L
Excepted quantities	E2
Marine pollutant (Yes or no)	Yes
EmS No.	F-E,S-E

ICAO/IATA-DGR

UN number	1993
UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains Isopropanol and Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride)
Transport hazard class	3
Transport subsidiary hazard class	None
Packing group	II
Excepted quantities	E2
Passenger and Cargo Aircraft Limited Quantity Packing Instructions	Y341
Passenger and Cargo Aircraft Limited Quantity Maximum net Quantity per Package	1 L
Passenger and Cargo Aircraft Packing Instructions	353
Passenger and Cargo Aircraft Maximum net Quantity per Package	5 L
Cargo Aircraft Packing Instructions	364
Cargo Aircraft Maximum net Quantity per Package	60 L
Special provisions	A3
ERG code	3H

UN-ADR

UN number	1993
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UN proper shipping name	FLAMMABLE LIQUID, N.O.S. (Contains Isopropanol and Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride)
Transport hazard class	3
Transport subsidiary hazard class	None
Packing group	II
Special provisions	274 601 640C or 274 601 640D
Limited quantities	1 L
Excepted quantities	E2
Packing instructions	P001 or P001 IBC02 R001
Special packing provisions	-
Mixed packing provisions	MP19
Portable tanks and bulk containers instructions	T7
Portable tanks and bulk containers special provisions	TP1 TP8 TP28
ADR tank code	L1.5BN or LGBF
ADR tank special provisions	-
Vehicle for tank carriage	FL
Transport category(Tunnel restriction code)	2 (D/E)
Special provisions for carriage(Packages)	-
Special provisions for carriage(Bulk)	-
Special provisions for carriage>Loading, unloading and handling)	-
Special provisions for carriage(Operation)	S2 S20
Hazard identification No.	33
Notes	When vapour pressure at 50°C more than 110kPa,special provisions:274 601 640C;packing instructions:P001;ADR tank code:L1.5BN;When vapour pressure at 50°C not more than 110 kPa,special provisions:274 601 640D;packing instructions:P001 IBC02 R001;ADR tank code:LGBF

15 Regulatory information

International chemical inventory

Component	EINECS	TSCA	DSL	IECSC	NZIoC	PICCS	KECI	AICS	ENCS
Dimethyloctadecyl[3-(trimethoxysilyl)propyl]ammonium chloride	✓	✓	✓	✓	✓	✓	✓	✓	✓
Isopropanol	✓	✓	✓	✓	✓	✓	✓	✓	✓
3-Chloropropyltrimethoxysilane	✓	✓	✓	✓	✓	✓	✓	✓	✓

【 EINECS 】 European Inventory of Existing Commercial Chemical Substances

【 TSCA 】 United States Toxic Substances Control Act Inventory

【 DSL 】	Canadian Domestic Substances List
【 IECSC 】	China Inventory of Existing Chemical Substances
【 NZIoC 】	New Zealand Inventory of Chemicals
【 PICCS 】	Philippines Inventory of Chemicals and Chemical Substances
【 KECI 】	Existing and Evaluated Chemical Substances
【 AICS 】	Australia Inventory of Chemical Substances
【 ENCS 】	Existing And New Chemical Substances

Note

"√" Indicates that the substance included in the regulations

"x" That no data or included in the regulations

16 Others

Information on revision

Creation Date	2016/04/07
Revision Date	2020/01/07
Reason for revision	-

Reference

[1]IPCS: The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>.

[2]IARC , website: <http://www.iarc.fr/>.

[3]OECD: The Global Portal to Information on Chemical Substances, website:

http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en.

[4]CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>.

[5]NLM: ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>.

[6]EPA: Integrated Risk Information System, website: <http://cfpub.epa.gov/iris/>.

[7]U.S. Department of Transportation: ERG, website: <http://www.phmsa.dot.gov/hazmat/library/erg>.

[8]Germany GESTIS-database on hazard substance, website: <http://gestis-en.itrust.de/>.

Abbreviations and acronyms

CAS –Chemical Abstracts Service

PC-STEL- Short term exposure limit

DNEL - Derived No Effect Level

RPE - Respiratory Protective Equipment

LC₅₀ - Lethal Concentration 50%

NOEC -No Observed Effect Concentration

PBT - Persistent, Bioaccumulative, Toxic

BCF - Bioconcentration factor (BCF)

IMDG-International Maritime Dangerous Goods

UN-The United Nations

NFPA-National Fire Protection Association

CMR - Carcinogens, mutagens or substances toxic to reproduction

PC-TWA - Time Weighted Average

IARC - International Agency for Research on Cancer

PNEC –Predicted No Effect Concentration

LD₅₀ - Lethal Dose 50%

EC₅₀ - Effective Concentration 50%

POW - Partition coefficient Octanol: Water

vPvB - very Persistent, very Bioaccumulative

ICAO/IATA-International Civil Aviation Organization/International Air Transportation Association

ACGIH-American Conference of Governmental Industrial Hygienists

OECD-Organization for Economic Co-operation and Development

Disclaimer

This Safety Data Sheet (SDS) was prepared according to UN GHS (the 8th revised edition). The data included was derived from international authoritative database and provided by the enterprise. Other information was based on the present state of our knowledge. We try to ensure the correctness of all information. However, due to the diversity of information sources and the limitations of our knowledge, this document is only for user' s reference. Users should make their independent judgment of suitability of this information for their particular purposes. We do not assume responsibility for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of the product.