HE 4005 ANTIMICROBIAL

Safety Data Sheet HE4005

Issue date: 15/12/2020 Revision date: 12/04/2022 Version: 2.1

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form	:	Mixture
Physical state	:	Liquid
Generic name	:	HE 4005 ANTIMICROBIAL
Product code	:	HE4005
Type of product	:	Pure substance
Formula	:	C23H52ClNO3Si
Synonyms	:	HE 4005 - 3-(TRIHYDROXYSILYL)PROPYLDIMETHYLOCTADECYLAMMONIUMCHLORIDE, 5% in water 3-(TRIHYDROXYSILYL)PROPYLDIMETHYLOCTADECYL AMMONIUM CHLORIDE OCTADECYLDIMETHYL(3-TRIHYDROXYSILYLPROPYL)AMMONIUM CHLORIDE SILSESQUIOXANES, 3-(DIMETHYLOCTADECYLAMMONIO)PROPYL, HYDROXY-TERMINATED, CHLORIDES
Chemical family	:	ORGANOTRIHYDROXYSILANE

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

1.2.1. Relevant identified uses

Use of the substance/mixture : Antimicrobial product

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

GELEST, INC.
11 East Steel Road
Morrisville, PA 19067
USA
T 215-547-1015 - F 215-547-2484 - (M-F): 8:00 AM - 5:30 PM EST
info@gelest.com - www.gelest.com

GELEST INC.
Fritz-Klatte-Strasse 8
65933 Frankfurt
Germany
T +49 (0) 69 3535106-500 - F +49 (0) 69 3535106-501 - (M-F): 8:00 AM - 4:00 PM
info@gelestde.com - www.gelest.com

1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300 (USA); +1 703-527-3887 (International)

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

Adverse physicochemical, human health and environmental effects

No additional information available

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

No labelling applicable

2.3. Other hazards

Contains no PBT/vPvB substances ≥ 0.1% assessed in accordance with REACH Annex XIII

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Water	(CAS-No.) 7732-18-5 (EC-No.) 231-791-2	89.4 – 90.4	Not classified
3-(Trihydroxysilyl)propyldimethyloctadecyl ammonium chloride	(CAS-No.) 199111-50-7	4.5 – 5.5	Not classified
Proprietary		2 – 2.1	Flam. Liq. 2, H225
Dimethylsiloxane-ethylene oxide block copolymer	(CAS-No.) 27306-78-1 (EC-No.) 608-078-3	1.5 – 2	Acute Tox. 4 (Inhalation:dust,mist), H332 Eye Irrit. 2, H319 Aquatic Chronic 2, H411

Full text of H- and EUH-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : Remove contaminated clothing and shoes. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). If possible show this sheet; if not available show packaging or label.

First-aid measures after inhalation : If you feel unwell, seek medical advice. Remove person to fresh air and keep comfortable for breathing.

First-aid measures after skin contact : Wash with plenty of water/…. Get medical advice/attention.

First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical advice/attention.

First-aid measures after ingestion : Get medical advice/attention. Never give anything by mouth to an unconscious person.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/effects after inhalation : No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of inhalation exposure.

Symptoms/effects after skin contact : No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of skin exposure.

Symptoms/effects after eye contact : May cause mild eye irritation.

Symptoms/effects after ingestion : No information available.

4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Water spray. Foam. Carbon dioxide. Dry chemical.

Unsuitable extinguishing media : None known.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Not flammable.

5.3. Advice for firefighters

Firefighting instructions : Exercise caution when fighting any chemical fire. Use water spray to cool exposed surfaces.

Protection during firefighting : Do not enter fire area without proper protective equipment, including respiratory protection. Avoid all eye and skin contact and do not breathe vapour and mist.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment as described in Section 8.

Emergency procedures : Evacuate unnecessary personnel.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. Equip cleanup crew with proper protection. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Prevent entry to sewers and public waters. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Clean up any spills as soon as possible, using an absorbent material to collect it. Keep in suitable, closed containers for disposal.

6.4. Reference to other sections

See Section 8. Exposure controls and personal protection.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Use personal protective equipment as required.

Hygiene measures : Wash contaminated clothing before reuse. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep container tightly closed. Store at ambient temperature of 25° C.

Incompatible materials : Oxidizing agent.

Storage area : The liquid may freeze if stored outside. Store away from heat.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Proprietary		
Austria	MAK (OEL TWA)	1900 mg/m³
Austria	MAK (OEL TWA) [ppm]	1000 ppm
Austria	MAK (OEL STEL)	3800 mg/m³
Austria	MAK (OEL STEL) [ppm]	2000 ppm
Belgium	OEL TWA	1907 mg/m³
Belgium	OEL TWA [ppm]	1000 ppm
Bulgaria	OEL TWA	1000 mg/m³
France	VLE (OEL C/STEL)	9500 mg/m³
France	VLE (OEL C/STEL) [ppm]	5000 ppm
France	VME (OEL TWA)	1900 mg/m³
France	VME (OEL TWA) [ppm]	1000 ppm
Germany	AGW (OEL TWA) [1]	960 mg/m³ (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed)
Germany	AGW (OEL TWA) [2]	500 ppm (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed)
Greece	OEL TWA	1900 mg/m³
Greece	OEL TWA [ppm]	1000 ppm
Italy - Portugal - USA ACGIH	ACGIH OEL STEL [ppm]	1000 ppm
Latvia	OEL TWA	1000 mg/m³
USA IDLH	IDLH [ppm]	3300 ppm (10% LEL)
USA NIOSH	NIOSH REL TWA	1900 mg/m³
USA NIOSH	NIOSH REL TWA [ppm]	1000 ppm
USA OSHA	OSHA PEL TWA [1]	1900 mg/m³
USA OSHA	OSHA PEL TWA [2]	1000 ppm
Spain	VLA-EC (OEL STEL)	1910 mg/m³
Spain	VLA-EC (OEL STEL) [ppm]	1000 ppm
Switzerland	KZGW (OEL STEL)	1920 mg/m³
Switzerland	KZGW (OEL STEL) [ppm]	1000 ppm
Switzerland	MAK (OEL TWA) [1]	960 mg/m³
Switzerland	MAK (OEL TWA) [2]	500 ppm

Proprietary		
Netherlands	TGG-8u (OEL TWA)	260 mg/m³
Netherlands	TGG-15min (OEL STEL)	1900 mg/m³
United Kingdom	WEL TWA (OEL TWA) [1]	1920 mg/m³
United Kingdom	WEL TWA (OEL TWA) [2]	1000 ppm
United Kingdom	WEL STEL (OEL STEL)	5760 mg/m³ (calculated)
United Kingdom	WEL STEL (OEL STEL) [ppm]	3000 ppm (calculated)
Czech Republic	PEL (OEL TWA)	1000 mg/m³
Denmark	OEL TWA [1]	1900 mg/m³
Denmark	OEL TWA [2]	1000 ppm
Finland	HTP (OEL TWA) [1]	1900 mg/m³
Finland	HTP (OEL TWA) [2]	1000 ppm
Finland	HTP (OEL STEL)	2500 mg/m³
Finland	HTP (OEL STEL) [ppm]	1300 ppm
Hungary	AK (OEL TWA)	1900 mg/m³
Hungary	CK (OEL STEL)	7600 mg/m³
Ireland	OEL STEL [ppm]	1000 ppm
Lithuania	IPRV (OEL TWA)	1000 mg/m³
Lithuania	IPRV (OEL TWA) [ppm]	500 ppm
Lithuania	TPRV (OEL STEL)	1900 mg/m³
Lithuania	TPRV (OEL STEL) [ppm]	1000 ppm
Norway	Grenseverdi (OEL TWA) [1]	950 mg/m³
Norway	Grenseverdi (OEL TWA) [2]	500 ppm
Norway	Korttidsverdi (OEL STEL)	950 mg/m³
Norway	Korttidsverdi (OEL STEL) [ppm]	500 ppm
Poland	NDS (OEL TWA)	1900 mg/m³
Romania	OEL TWA	1900 mg/m³
Romania	OEL TWA [ppm]	1000 ppm
Romania	OEL STEL	9500 mg/m³
Romania	OEL STEL [ppm]	5000 ppm
Slovakia	NPHV (OEL TWA) [1]	960 mg/m³
Slovakia	NPHV (OEL TWA) [2]	500 ppm
Slovakia	NPHV (OEL C)	1920 mg/m³
Sweden	NGV (OEL TWA)	1000 mg/m³
Sweden	NGV (OEL TWA) [ppm]	500 ppm
Sweden	KTV (OEL STEL)	1900 mg/m³
Sweden	KTV (OEL STEL) [ppm]	1000 ppm
Canada (Quebec)	VEMP (OEL TWA)	1880 mg/m³
Canada (Quebec)	VEMP (OEL TWA) [ppm]	1000 ppm
Australia	OES TWA [1]	1880 mg/m³
Australia	OES TWA [2]	1000 ppm
Portugal	OEL TWA [ppm]	1000 ppm
Portugal	OEL chemical category	A4 - Not Classifiable as a Human Carcinogen

8.2. Exposure controls

Appropriate engineering controls:

Provide local exhaust or general room ventilation.

Personal protective equipment:

Avoid all unnecessary exposure. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure.

Hand protection:

Neoprene or nitrile rubber gloves

Eye protection:

Chemical goggles or safety glasses

Skin and body protection:

Wear suitable protective clothing

Respiratory protection:

Where exposure through inhalation may occur from use, respiratory protection equipment is recommended. N95 particulate respirator

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Appearance	:	Clear liquid.
Colour	:	Colourless.
Odour	:	None.
Odour threshold	:	No data available
Refractive index	:	No additional information available
pH	:	3 – 4
Relative evaporation rate (butylacetate=1)	:	No data available
Melting point	:	No data available
Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	> 200 °F
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Flammability (solid, gas)	:	No data available
Vapour pressure	:	No data available
Relative vapour density at 20 °C	:	No data available
Relative density	:	1.02
% Volatiles	:	0 %
Solubility	:	No data available
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Partition coefficient n-octanol/water (Log Kow)	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available
Explosive properties	:	No data available
Oxidising properties	:	No data available
Explosive limits	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Stable.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

No additional information available

10.5. Incompatible materials

Oxidizing agent.

10.6. Hazardous decomposition products

Organic acid vapors. Silicon dioxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Not classified

Water (7732-18-5)	
LD50 oral rat	> 90 ml/kg

3-(Trihydroxysilyl)propyldimethyloctadecyl ammonium chloride (199111-50-7)	
LD50 oral rat	> 5000 mg/kg
LD50 dermal rabbit	> 5050 mg/kg
LC50 Inhalation - Rat	> 2.19 mg/l

Proprietary	
LD50 oral rat	7060 mg/kg
LC50 Inhalation - Rat	124.7 mg/l/4h
LC50 Inhalation - Rat [ppm]	20000 ppm 10 hrs.
LDLo oral rat	1400 mg/kg (Human)
ATE CLP (oral)	7060 mg/kg bodyweight
ATE CLP (gases)	20000 ppmv/4h
ATE CLP (vapours)	124.7 mg/l/4h
ATE CLP (dust,mist)	124.7 mg/l/4h

Dimethylsiloxane-ethylene oxide block copolymer (27306-78-1)	
LD50 oral rat	4920 µl/kg
LD50 dermal rat	> 2000 mg/kg
LC50 Inhalation - Rat	2 g/m³ (Exposure time: 4 h)
ATE CLP (oral)	4920 mg/kg bodyweight
ATE CLP (vapours)	2 mg/l/4h
ATE CLP (dust,mist)	2 mg/l/4h

Skin corrosion/irritation : Not classified
pH: 3 – 4

Serious eye damage/irritation : Not classified
pH: 3 – 4

Respiratory or skin sensitisation : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

STOT-single exposure : Not classified

STOT-repeated exposure : Not classified

Aspiration hazard : Not classified

Symptoms/effects after inhalation : No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of inhalation exposure.

Symptoms/effects after skin contact : No significant signs or symptoms indicative of any adverse health hazard are expected to occur as a result of skin exposure.

Symptoms/effects after eye contact : May cause mild eye irritation.

Symptoms/effects after ingestion : No information available.

SECTION 12: Ecological information

12.1. Toxicity

Hazardous to the aquatic environment, short–term (acute) : Not classified

Hazardous to the aquatic environment, long–term (chronic) : Not classified

Proprietary	
LC50 - Fish [1]	> 10000 mg/l (Exposure time: 96 h - Species: Oncorhynchus mykiss [rainbow trout])
LC50 - Fish [2]	> 13400 mg/l (Exposure time: 96 h - Species: Pimephales promelas [fathead minnow])

Dimethylsiloxane-ethylene oxide block copolymer (27306-78-1)	
LC50 - Fish [1]	6.8 mg/l (Zebra Fish)

Dimethylsiloxane-ethylene oxide block copolymer (27306-78-1)	
EC50 - Crustacea [1]	25 mg/l (Daphnia magna)
ErC50 algae	32 mg/l (Pseudokirchneriella subcapitata)

12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

Proprietary	
Partition coefficient n-octanol/water (Log Pow)	-0.32

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Sewage disposal recommendations : Do not dispose of waste into sewer.

Product/Packaging disposal recommendations : Dispose in a safe manner in accordance with local/national regulations. Dispose of contents/container to licensed waste disposal facility..

Additional information : Improper disposal of pesticides or pesticide residues is a violation of US Federal law. Preferred option for disposal of waste pesticides is incineration at a licensed and permitted facility.

Ecology - waste materials : Avoid release to the environment.

SECTION 14: Transport information

14.1. UN number

In accordance with ADR / IMDG / IATA / ADN / RID

14.1. UN number

UN-No. (ADR) : Not applicable

UN-No. (IMDG) : Not applicable

UN-No. (IATA) : Not applicable

UN-No. (ADN) : Not applicable

UN-No. (RID) : Not applicable

14.2. UN proper shipping name

Proper Shipping Name (ADR) : Not applicable

Proper Shipping Name (IMDG) : Not applicable

Proper Shipping Name (IATA) : Not applicable

Proper Shipping Name (ADN) : Not applicable

Proper Shipping Name (RID) : Not applicable

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR) : Not applicable

IMDG

Transport hazard class(es) (IMDG) : Not applicable

IATA

Transport hazard class(es) (IATA) : Not applicable

ADN

Transport hazard class(es) (ADN) : Not applicable

RID

Transport hazard class(es) (RID) : Not applicable

14.4. Packing group

Packing group (ADR)	:	Not applicable
Packing group (IMDG)	:	Not applicable
Packing group (IATA)	:	Not applicable
Packing group (ADN)	:	Not applicable
Packing group (RID)	:	Not applicable

14.5. Environmental hazards

Dangerous for the environment	:	No
Marine pollutant	:	No
Other information	:	No supplementary information available

14.6. Special precautions for user

- Overland transport

Not applicable

- Transport by sea

Not applicable

- Air transport

Not applicable

- Inland waterway transport

Not applicable

- Rail transport

Not applicable

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

Contains no substance subject to Regulation (EU) No 2019/1021 of the European Parliament and of the Council of 20 June 2019 on persistent organic pollutants

Contains no substance on the REACH candidate list

Contains no REACH Annex XIV substances

Contains no substance subject to Regulation (EU) No 649/2012 of the European Parliament and of the Council of 4 July 2012 concerning the export and import of hazardous chemicals.

Contains no REACH Annex XIV substances

% Volatiles	:	0 %

15.1.2. National regulations

Germany

Regulatory reference	:	Not classified according to Regulation Governing Systems for Handling Substances Hazardous to Waters (AwSV)
Employment restrictions	:	Observe restrictions according Act on the Protection of Working Mothers (MuSchG) Observe restrictions according Act on the Protection of Young People in Employment (JArbSchG)
Hazardous Incident Ordinance (12. BImSchV)	:	Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen	:	Ethanol is listed

SZW-lijst van mutagene stoffen	:	None of the components are listed
SZW-lijst van reprotoxische stoffen – Borstvoeding	:	Ethanol is listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid	:	Ethanol is listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling	:	Ethanol is listed

15.2. Chemical safety assessment

No additional information available

SECTION 16: Other information

Abbreviations and acronyms:

	Abbreviations: ND: Not Determined, No Data; NA: Not Applicable; LD: Lethal Dose; LC: Lethal Concentration; ATE: Acute Toxicity Estimates; H: hour; °: °C unless otherwise stated; mm: millimeters Hg, torr; PEL: permissible exposure level; TWA: time weighted average; TLV: threshold limit value; TG: Test Guideline; NIOSH: National Institute for Occupational Safety and Health; IARC: International Agency for Research on Cancer; NTP: National Toxicology Program; HMIS: Hazardous Material Information System; CAS No.: Chemcial Abstract Service Registration Number; EC No.: European Commission Registration Number; EC Index No.: European Commission Index Number; OECD: The Organisation for Economic Co-operation and Development; GHS: The Globally Harmonized System of Classification and Labelling; APF: Assigned Protection Factor

Other information : Prepared by safety and environmental affairs.

Full text of H- and EUH-statements:

Acute Tox. 4 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 4
Aquatic Chronic 2	Hazardous to the aquatic environment – Chronic Hazard, Category 2
Eye Irrit. 2	Serious eye damage/eye irritation, Category 2
Flam. Liq. 2	Flammable liquids, Category 2
H225	Highly flammable liquid and vapour.
H319	Causes serious eye irritation.
H332	Harmful if inhaled.
H411	Toxic to aquatic life with long lasting effects.

SDS EU (REACH Annex II) - Custom

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

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