

HARDENER HV 998-1

Version	Revision Date:	SDS Number:	Date of last issue: 19.05.2016
1.3	02.06.2016	400000000524	Date of first issue: 02.07.2015

SECTION 1: Identification of the substance/mixture and of the company/undertaking**1.1 Product identifier**

Trade name : HARDENER HV 998-1

1.2 Relevant identified uses of the substance or mixture and uses advised againstUse of the : Hardener
Substance/Mixture**1.3 Details of the supplier of the safety data sheet**

Company	: Huntsman Advanced Materials (Switzerland) GmbH
Address	: Klybeckstrasse 200 CH-4057 Basel Switzerland
Telephone	: +41 61 299 20 41
Telefax	: +41 61 299 20 40
E-mail address of person responsible for the SDS	: Global_Product_EHS_AdMat@huntsman.com

1.4 Emergency telephone numberEmergency telephone number : EUROPE: +32 35 75 1234
France ORFILA: +33(0)145425959
ASIA: +65 6336-6011
China: +86 20 39377888
+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1/800/424.9300
Swiss Toxicologic Information Centre - Emergency Phone 145
(24 h)
+41 44 251 5151 (from outside Switzerland)**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****Classification (REGULATION (EC) No 1272/2008)**

Skin irritation, Category 2	H315: Causes skin irritation.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Chronic aquatic toxicity, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements**Labelling (REGULATION (EC) No 1272/2008)**

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Hazard pictograms

:



Signal word

: Danger

Hazard statements

:	H315	Causes skin irritation.
	H318	Causes serious eye damage.
	H317	May cause an allergic skin reaction.
	H411	Toxic to aquatic life with long lasting effects.

Precautionary statements

:	Prevention:	
	P261	Avoid breathing mist or vapours.
	P273	Avoid release to the environment.
	P280	Wear protective gloves/ eye protection/ face protection.
	Response:	
	P303 + P361 + P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
	P304 + P340 + P310	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/doctor.
	P305 + P351 + P338 + P310	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/doctor.
	Disposal:	
	P501	Dispose of contents and container in accordance with all local, regional, national and international regulations.

Hazardous components which must be listed on the label:

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine

trientine

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

Chemical name	CAS-No. EC-No.	Classification (REGULATION)	Concentration (%) w/w)
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	Registration number	(EC) No 1272/2008)	
Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine	68154-62-1	Skin Irrit.2; H315 Eye Dam.1; H318 Skin Sens.1A; H317 Aquatic Chronic2; H411	30 - 60
N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine	10563-29-8 234-148-4	Acute Tox.4; H302 Skin Corr.1A; H314 Skin Sens.1B; H317	3 - 7
trientine	90640-67-8	Acute Tox.4; H302 Acute Tox.4; H312 Skin Corr.1B; H314 Skin Sens.1; H317 Aquatic Chronic3; H412	3 - 7

For explanation of abbreviations see section 16.

SECTION 4: First aid measures
4.1 Description of first aid measures

- | | |
|-------------------------|--|
| If inhaled | : Move to fresh air.
Keep patient warm and at rest.
If symptoms persist, call a physician. |
| In case of skin contact | : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.
If symptoms persist, call a physician. |
| In case of eye contact | : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Seek medical advice. |
| If swallowed | : Rinse mouth with water.
Do NOT induce vomiting.
Consult a physician if necessary. |

4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed
SECTION 5: Firefighting measures
5.1 Extinguishing media

- | | |
|------------------------------|---|
| Suitable extinguishing media | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
|------------------------------|---|

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Unsuitable extinguishing media : None known.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not use a solid water stream as it may scatter and spread fire.
Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : No data is available on the product itself.

5.3 Advice for firefighters

Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.

Specific extinguishing methods : No data is available on the product itself.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures**

Personal precautions : Use personal protective equipment.
Ensure adequate ventilation.

6.2 Environmental precautions

Environmental precautions : Prevent product from entering drains.
Do not allow contact with soil, surface or ground water.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust).
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

None

SECTION 7: Handling and storage**7.1 Precautions for safe handling**

Technical measures : Ensure that eyewash stations and safety showers are close to the workstation location.

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- | | |
|---|--|
| Local/Total ventilation | : Ensure adequate ventilation. |
| Advice on safe handling | : Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Dispose of rinse water in accordance with local and national regulations. |
| Advice on protection against fire and explosion | : Normal measures for preventive fire protection. |
| Hygiene measures | : Handle in accordance with good industrial hygiene and safety practice. When using do not eat, drink or smoke. Wash hands before breaks and at the end of workday. |

7.2 Conditions for safe storage, including any incompatibilities

- | | |
|---|---|
| Requirements for storage areas and containers | : Keep containers tightly closed in a cool, well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage. |
| Other data | : No decomposition if stored and applied as directed. |

7.3 Specific end use(s)**SECTION 8: Exposure controls/personal protection****8.1 Control parameters**

Contains no substances with occupational exposure limit values.

8.2 Exposure controls**Engineering measures**

Maintain air concentrations below occupational exposure standards.

Personal protective equipment

Eye protection	: Safety glasses
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Hand protection	
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Material	: butyl-rubber Ethyl Vinyl Alcohol Laminate (EVAL)
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Break through time	: > 8 h
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Nitrile rubber

10 - 480 min

Remarks	: The suitability for a specific workplace should be discussed with the producers of the protective gloves. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).
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Skin and body protection	: Protective suit
Respiratory protection	: Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.
Filter type	: Combined particulates and organic vapour type (A-P)

SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties**

Appearance	: paste
Colour	: grey
Odour	: amine-like
Flash point	: > 100 °C Method: Pensky-Martens closed cup, closed cup
Vapour pressure	: < 0,95 hPa (25 °C)
Density	: 1,6 g/cm ³ (25 °C)
Solubility(ies)	
Water solubility	: practically insoluble (20 °C)
Viscosity	
Viscosity, dynamic	: 60.000 - 80.000 mPa.s (20 °C)

9.2 Other information

No data available

SECTION 10: Stability and reactivity**10.1 Reactivity**

Stable under recommended storage conditions.

10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable under normal conditions.

10.4 Conditions to avoid

Conditions to avoid : None known.

10.5 Incompatible materials

Materials to avoid : Strong acids and strong bases

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Strong oxidizing agents

10.6 Hazardous decomposition products

Carbon oxides
Nitrogen oxides (NO_x)
Burning produces noxious and toxic fumes.

SECTION 11: Toxicological information**11.1 Information on toxicological effects****Acute toxicity**

Acute oral toxicity - Product : Acute toxicity estimate : > 2.000 mg/kg
Method: Calculation method

Acute inhalation toxicity : No data available

Acute dermal toxicity - Product : Acute toxicity estimate : > 2.000 mg/kg
Method: Calculation method

Acute toxicity (other routes of administration) : No data available

Skin corrosion/irritation**Product:**

Species: synthetic macromolecular bio-barrier
Method: OECD Test Guideline 435
Result: Non-corrosive
GLP: yes

Serious eye damage/eye irritation**Components:**

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:
Species: Rabbit
Assessment: Severe eye irritation
Method: OECD Test Guideline 405
Result: Irritating to eyes.

Species: Other
Assessment: May cause eye and skin irritation.
Method: OECD Test Guideline 437
Result: May cause eye and skin irritation.

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:
Assessment: Severe eye irritation
Result: Corrosive

trientine:
Species: Rabbit
Assessment: Corrosive
Method: OECD Test Guideline 404

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Result: Corrosive

Respiratory or skin sensitisation**Components:**

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Exposure routes: Skin

Species: Mouse

Method: OECD Test Guideline 429

Result: Causes sensitisation.

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: The product is a skin sensitiser, sub-category 1B.

trientine:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: May cause sensitisation by skin contact.

Assessment: No data available

Germ cell mutagenicity**Components:**

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

: Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

: Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 487
Result: negative

: Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

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: Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

trientine:

Genotoxicity in vitro

: Concentration: 0 - 200 µg/L
Metabolic activation: negative
Method: OECD Test Guideline 482
Result: negative

Components:

trientine:

Genotoxicity in vivo

: Application Route: Intraperitoneal injection
Dose: 0 - 600 mg/kg
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity**Components:**

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species: Mouse, (male)

Application Route: Dermal

Exposure time: 20 month(s)

Frequency of Treatment: 3 daily

Result: negative

trientine:

Species: Mouse, (male)

Application Route: Dermal

Dose: 42 mg/kg

Frequency of Treatment: 3 daily

Method: OECD Test Guideline 451

Result: negative

Carcinogenicity -
Assessment

: No data available

Reproductive toxicity**Components:**

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Effects on fertility

: Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 422
Result: Animal testing did not show any effects on fertility.

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species: Rat, male and female

Application Route: Oral

Method: OECD Test Guideline 422

Result: Animal testing did not show any effects on fertility.

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Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Effects on foetal development : Species: Rat, male and female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 15 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: 15 mg/kg body weight
Embryo-foetal toxicity: No observed adverse effect level: 15 mg/kg body weight
Method: OECD Test Guideline 422
Result: No effects on fertility and early embryonic development were detected.

trientine:

Species: Rat
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: > 750 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rabbit
Application Route: Dermal
General Toxicity Maternal: No observed adverse effect level: 125 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Components:

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Reproductive toxicity - Assessment : No evidence of adverse effects on sexual function and fertility, or on development, based on animal experiments.

STOT - single exposure

No data available

STOT - repeated exposure

No data available

Repeated dose toxicity**Components:**

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

Species: Rat, male and female

NOAEL: 1000 mg/kg

Application Route: Ingestion

Exposure time: 6 Weeks Number of exposures: 7 d

Method: Subacute toxicity

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Species: Rat, male and female

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: 550

Application Route: Ingestion

Test atmosphere: vapour

Exposure time: 3 WeeksNumber of exposures: 7 d

Method: Subchronic toxicity

Species: Mouse, male

NOAEL: $\geq 56,3$

Application Route: Skin contact

Exposure time: 20 hNumber of exposures: 3 d

Method: Chronic toxicity

trientine:

Species: Rat, male and female

NOAEL: 50 mg/kg

Application Route: Ingestion

Exposure time: 26 WeeksNumber of exposures: 7 d

Method: Subchronic toxicity

Repeated dose toxicity - : No data available
Assessment

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information**Product:**

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Remarks: No data available

SECTION 12: Ecological information**12.1 Toxicity****Components:**

Fatty acids, C18-unsatd., dimers, polymers with oleic acid and triethylenetetramine:

- | | |
|---|--|
| Toxicity to fish | : LC50 (Brachydanio rerio (zebrafish)): 7,07 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : EC50 (Daphnia magna (Water flea)): 5,18 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202 |
| Toxicity to algae | : EC50 (Selenastrum capricornutum (green algae)): 2,43 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201 |
| Toxicity to bacteria | : EC50 (activated sludge): 421 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209 |
- N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:
- | | |
|---|---|
| Toxicity to fish | : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203 |
| Toxicity to daphnia and other aquatic invertebrates | : EC50 (Daphnia magna (Water flea)): 9,2 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202 |
| Toxicity to algae | : ErC50 (Selenastrum capricornutum (green algae)): 21 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201 |
| Toxicity to bacteria | : EC50 (Pseudomonas putida): 181 mg/l
Exposure time: 16 h
Test Type: static test |

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Test substance: Fresh water
Method: DIN 38 412 Part 8

Ecotoxicology Assessment
Acute aquatic toxicity

: Harmful to aquatic life.

trientine:

Toxicity to fish

: LC50 (Pimephales promelas (fathead minnow)): 330 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: Fish Acute Toxicity Test

Toxicity to daphnia and other
aquatic invertebrates

: EC50 (Daphnia magna (Water flea)): 31,1 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: Directive 67/548/EEC, Annex V, C.2.

Toxicity to algae

: ErC50 (Selenastrum capricornutum (green algae)): 20 mg/l
Exposure time: 72 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to bacteria

: EC50 (activated sludge): 800 mg/l
Exposure time: 0,5 h
Test Type: static test
Test substance: Fresh water

Toxicity to daphnia and other
aquatic invertebrates
(Chronic toxicity)

: EC10: 1,9 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Ecotoxicology Assessment
Acute aquatic toxicity

: This product has no known ecotoxicological effects.

12.2 Persistence and degradability**Components:**

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:

Biodegradability

: Result: Readily biodegradable
Biodegradation: 100 %
Exposure time: 28 d
Method: ISO Method, other

trientine:

Biodegradability

: Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 0 %
Exposure time: 162 d
Method: OECD Test Guideline 301D

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Inoculum: activated sludge
Result: Not readily biodegradable.
Biodegradation: 20 %
Exposure time: 84 d
Method: Inherent Biodegradability: Modified SCAS Test

12.3 Bioaccumulative potential**Components:**

N'-(3-aminopropyl)-N,N-dimethylpropane-1,3-diamine:
Partition coefficient: n- : log Pow: 0,5
octanol/water

log Pow: -0,56 (25 °C)
pH: 11,6
Method: OECD Test Guideline 107

trientine:
Partition coefficient: n- : log Pow: -2,65 (20 °C)
octanol/water : Method: OECD Test Guideline 117

12.4 Mobility in soil**Components:**

trientine:
Distribution among : Koc: 1584,9 - 5012
environmental compartments : Method: OECD Test Guideline 106

12.5 Results of PBT and vPvB assessment**Product:**

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

12.6 Other adverse effects

No data available

SECTION 13: Disposal considerations**13.1 Waste treatment methods**

Product : Can be landfilled or incinerated, when in compliance with local regulations.
Where possible recycling is preferred to disposal or incineration.
Send to a licensed waste management company.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.

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SECTION 14: Transport information**IATA**

14.1 UN number	: UN 3082
14.2 UN proper shipping name	: Environmentally hazardous substance, liquid, n.o.s. (POLYAMIDE RESIN)
14.3 Transport hazard class(es)	: 9
14.4 Packing group	: III
Labels	: Miscellaneous
Packing instruction (cargo aircraft)	: 964
Packing instruction (passenger aircraft)	: 964

IMDG

14.1 UN number	: UN 3082
14.2 UN proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (POLYAMIDE RESIN)
14.3 Transport hazard class(es)	: 9
14.4 Packing group	: III
Labels	: 9
EmS Code	: F-A, S-F
14.5 Environmental hazards	
Marine pollutant	: yes

ADR

14.1 UN number	: UN 3082
14.2 UN proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (POLYAMIDE RESIN)
14.3 Transport hazard class(es)	: 9
14.4 Packing group	: III
Labels	: 9
14.5 Environmental hazards	
Marine pollutant	: no

RID

14.1 UN number	: UN 3082
14.2 UN proper shipping name	: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (POLYAMIDE RESIN)
14.3 Transport hazard class(es)	: 9
14.4 Packing group	: III
Labels	: 9
14.5 Environmental hazards	

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Marine pollutant : no

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

Not applicable for product as supplied.

SECTION 15: Regulatory information**15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture****The components of this product are reported in the following inventories:**

TSCA	: On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
AICS	: On the inventory, or in compliance with the inventory
NZIoC	: Not in compliance with the inventory
ENCS	: Low volume exemption
KECI	: On the inventory, or in compliance with the inventory
PICCS	: Not in compliance with the inventory
IECSC	: On the inventory, or in compliance with the inventory
TCSI	: Not in compliance with the inventory

Inventories

AICS (Australia), DSL (Canada), IECSC (China), ENCS (Japan), KECI (Korea), NZIOIC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States of America)

15.2 Chemical safety assessment**SECTION 16: Other information****Full text of H-Statements**

H302	: Harmful if swallowed.
H312	: Harmful in contact with skin.
H314	: Causes severe skin burns and eye damage.
H315	: Causes skin irritation.
H317	: May cause an allergic skin reaction.
H318	: Causes serious eye damage.

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H411 : Toxic to aquatic life with long lasting effects.
H412 : Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	: Acute toxicity
Aquatic Chronic	: Chronic aquatic toxicity
Eye Dam.	: Serious eye damage
Skin Corr.	: Skin corrosion
Skin Irrit.	: Skin irritation
Skin Sens.	: Skin sensitisation

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