

**ARALDITE® 252-1 RESIN BLUE**

|         |                |              |                                 |
|---------|----------------|--------------|---------------------------------|
| Version | Revision Date: | SDS Number:  | Date of last issue: 12/27/2018  |
| 2.0     | 04/11/2022     | 400001015228 | Date of first issue: 04/24/2018 |

Print Date 06/26/2025

**SECTION 1. IDENTIFICATION**

Product name : ARALDITE® 252-1 RESIN BLUE

**Manufacturer or supplier's details**Company name of supplier : Huntsman Advanced Materials Americas LLC  
Address : P.O. Box 4980The Woodlands,  
TX 77387  
United States of America (USA)

Telephone : Non-Emergency: (800) 257-5547

E-mail address of person responsible for the SDS : Global\_Product\_EHS\_AdMat@huntsman.com

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

**Recommended use of the chemical and restrictions on use**

Recommended use : Epoxy constituents

**SECTION 2. HAZARDS IDENTIFICATION****GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Skin irritation : Category 2

Eye irritation : Category 2A

Skin sensitisation : Category 1

Short-term (acute) aquatic hazard : Category 2

Chronic aquatic toxicity : Category 2

**GHS label elements**

Hazard pictograms :



Signal word : Warning

Hazard statements : H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H411 Toxic to aquatic life with long lasting effects.Precautionary statements : **Prevention:**

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P261 Avoid breathing mist or vapours.  
P264 Wash skin thoroughly after handling.  
P272 Contaminated work clothing must not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ eye protection/ face protection.  
**Response:**  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P337 + P313 If eye irritation persists: Get medical advice/ attention.  
P362 Take off contaminated clothing and wash before reuse.  
P391 Collect spillage.  
**Storage:**  
Not available  
**Disposal:**  
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

**Other hazards**

None known.

**SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**

Substance / Mixture : Mixture

**Hazardous components**

| Chemical name                                     | CAS-No.    | Concentration (% w/w) |
|---------------------------------------------------|------------|-----------------------|
| Phenol, polymer with formaldehyde, glycidyl ether | 28064-14-4 | 50 - 70               |
| Glass, oxide, chemicals                           | 65997-17-3 | 20 - 30               |
| [3-(2,3-epoxypropoxy)propyl]trimethoxysilane      | 2530-83-8  | 1 - 5                 |
| melamine                                          | 108-78-1   | 0.1 - 1               |

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

**SECTION 4. FIRST AID MEASURES**

General advice : Move out of dangerous area.

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Show this safety data sheet to the doctor in attendance.  
Treat symptomatically.  
Get medical attention if symptoms occur.

- |                                                             |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| If inhaled                                                  | : | If inhaled, remove to fresh air.<br>Get medical attention if symptoms occur.                                                                                                                                                                                                                                                                                                                                                                              |
| In case of skin contact                                     | : | If skin irritation persists, call a physician.<br>If on skin, rinse well with water.<br>If on clothes, remove clothes.                                                                                                                                                                                                                                                                                                                                    |
| In case of eye contact                                      | : | Immediately flush eye(s) with plenty of water.<br>Remove contact lenses.<br>Keep eye wide open while rinsing.<br>If eye irritation persists, consult a specialist.                                                                                                                                                                                                                                                                                        |
| If swallowed                                                | : | Keep respiratory tract clear.<br>Never give anything by mouth to an unconscious person.<br>If symptoms persist, call a physician.                                                                                                                                                                                                                                                                                                                         |
| Most important symptoms and effects, both acute and delayed | : | None known.                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Protection of first-aiders                                  | : | First Aid responders should pay attention to self-protection and use the recommended protective clothing<br>If potential for exposure exists refer to Section 8 for specific personal protective equipment.<br>Avoid inhalation, ingestion and contact with skin and eyes.<br>No action shall be taken involving any personal risk or without suitable training.<br>It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. |
| Notes to physician                                          | : | Treat symptomatically.                                                                                                                                                                                                                                                                                                                                                                                                                                    |

**SECTION 5. FIREFIGHTING MEASURES**

- |                                      |   |                                                                                            |
|--------------------------------------|---|--------------------------------------------------------------------------------------------|
| Suitable extinguishing media         | : | Water spray<br>Alcohol-resistant foam<br>Carbon dioxide (CO <sub>2</sub> )<br>Dry chemical |
| Unsuitable extinguishing media       | : | Exercise caution when using a high volume water jet as it may scatter and spread fire      |
| Specific hazards during firefighting | : | Do not allow run-off from fire fighting to enter drains or water courses.                  |
| Hazardous combustion products        | : | Carbon oxides                                                                              |
| Specific extinguishing               | : | Use extinguishing measures that are appropriate to local                                   |

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methods

circumstances and the surrounding environment.

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.

Special protective equipment for firefighters

: Wear self-contained breathing apparatus for firefighting if necessary.

**SECTION 6. ACCIDENTAL RELEASE MEASURES**

Personal precautions, protective equipment and emergency procedures

: Use personal protective equipment.  
Refer to protective measures listed in sections 7 and 8.

Environmental precautions

: Prevent product from entering drains.  
Prevent further leakage or spillage if safe to do so.  
If the product contaminates rivers and lakes or drains inform respective authorities.

Methods and materials for containment and 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.

**SECTION 7. HANDLING AND STORAGE**

Advice on protection against fire and explosion

: Normal measures for preventive fire protection.

Advice on safe handling

: Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.  
Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before use.  
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.

Conditions for safe storage

: Keep container tightly closed in a dry and well-ventilated place.  
Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
Keep in properly labelled containers.

Materials to avoid

: For incompatible materials please refer to Section 10 of this SDS.

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Recommended storage temperature : 36 - 104 °F / 2 - 40 °C

Further information on storage stability : Stable under normal conditions.

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Components with workplace control parameters**

Contains no substances with occupational exposure limit values.

**Personal protective equipment**

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines  
Recommended Filter type:  
Combined particulates and organic vapour type

Filter type : Filter type A-P

Eye protection : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.

Skin and body protection : Impervious clothing  
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Hygiene measures : When using do not eat or drink.  
When using do not smoke.  
Wash hands before breaks and at the end of workday.

**SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES**

Appearance : paste

Colour : blue

Odour : none

Odour Threshold : No data is available on the product itself.

pH : substance/mixture is non-soluble (in water)

Melting point/freezing point : No data is available on the product itself.

Boiling point : > 392 °F / > 200 °C

Flash point : > 212 °F / > 100 °C  
Method: Pensky-Martens closed cup, closed cup

Evaporation rate : No data is available on the product itself.

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|                                                    |                                               |
|----------------------------------------------------|-----------------------------------------------|
| Flammability (solid, gas)                          | : No data is available on the product itself. |
| Flammability (liquids)                             | : No data is available on the product itself. |
| Upper explosion limit / Upper flammability limit   | : No data is available on the product itself. |
| Lower explosion limit / Lower flammability limit   | : No data is available on the product itself. |
| Vapour pressure                                    | : > 0.0001 hPa (68 °F / 20 °C)                |
| Relative vapour density                            | : No data is available on the product itself. |
| Relative density                                   | : No data is available on the product itself. |
| Density                                            | : 0.76 g/cm3 (77 °F / 25 °C)                  |
| Solubility(ies)                                    |                                               |
| Water solubility                                   | : insoluble (68 °F / 20 °C)                   |
| Solubility in other solvents                       | : No data is available on the product itself. |
| Partition coefficient: n-octanol/water             | : No data is available on the product itself. |
| Auto-ignition temperature                          | : > 392 °F / > 200 °C                         |
| Decomposition temperature                          | : > 392 °F / > 200 °C                         |
| Self-Accelerating decomposition temperature (SADT) | : No data is available on the product itself. |
| Viscosity                                          | : No data is available on the product itself. |
| Explosive properties                               | : No data is available on the product itself. |
| Oxidizing properties                               | : No data is available on the product itself. |
| Particle size                                      | : No data is available on the product itself. |

**SECTION 10. STABILITY AND REACTIVITY**

|                                    |                                                               |
|------------------------------------|---------------------------------------------------------------|
| Reactivity                         | : No dangerous reaction known under conditions of normal use. |
| Chemical stability                 | : Stable under normal conditions.                             |
| Possibility of hazardous reactions | : No hazards to be specially mentioned.                       |
| Conditions to avoid                | : None known.                                                 |
| Incompatible materials             | : Strong acids and strong bases                               |

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Strong oxidizing agents

Hazardous decomposition : carbon dioxide  
products : carbon monoxide

**SECTION 11. TOXICOLOGICAL INFORMATION****Acute toxicity****Product:**

Acute dermal toxicity : Acute toxicity estimate: > 5,000 mg/kg  
Method: Calculation method

**Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

Acute oral toxicity : LD50 (Rat, female): > 2,000 mg/kg  
Method: OECD Test Guideline 420  
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Acute oral toxicity : LD50 (Rat, male and female): 8,025 mg/kg  
Method: OECD Test Guideline 401  
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat, male and female): > 5.3 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403  
Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD50 (Rabbit, male): 4,250 mg/kg  
Method: OECD Test Guideline 402

**melamine:**

Acute oral toxicity : LD50 (Rat, male and female): 3,161 - 3,828 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): > 5190 mg/m3  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 403  
Assessment: The substance or mixture has no acute inhalation toxicity

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**Skin corrosion/irritation****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

|         |   |                         |
|---------|---|-------------------------|
| Species | : | Rabbit                  |
| Method  | : | OECD Test Guideline 404 |
| Result  | : | Irritating to skin.     |

**Glass, oxide, chemicals:**

|            |   |                              |
|------------|---|------------------------------|
| Species    | : | Rabbit                       |
| Assessment | : | No skin irritation           |
| Method     | : | OECD Test Guideline 404      |
| Result     | : | Normally reversible injuries |

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

|         |   |                         |
|---------|---|-------------------------|
| Species | : | Rabbit                  |
| Method  | : | OECD Test Guideline 404 |
| Result  | : | No skin irritation      |

**melamine:**

|         |   |                         |
|---------|---|-------------------------|
| Species | : | Rabbit                  |
| Method  | : | OECD Test Guideline 404 |
| Result  | : | No skin irritation      |

**Serious eye damage/eye irritation****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

|         |   |                         |
|---------|---|-------------------------|
| Species | : | Rabbit                  |
| Result  | : | Irritating to eyes.     |
| Method  | : | OECD Test Guideline 405 |

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

|            |   |                                 |
|------------|---|---------------------------------|
| Species    | : | Rabbit                          |
| Result     | : | Risk of serious damage to eyes. |
| Assessment | : | Severe eye irritation           |
| Method     | : | OECD Test Guideline 405         |

**melamine:**

|         |   |                   |
|---------|---|-------------------|
| Species | : | Rabbit            |
| Remarks | : | slight irritation |

**Respiratory or skin sensitisation****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

|                 |   |                                          |
|-----------------|---|------------------------------------------|
| Exposure routes | : | Skin                                     |
| Species         | : | Mouse                                    |
| Method          | : | OECD Test Guideline 429                  |
| Result          | : | May cause sensitisation by skin contact. |

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**Glass, oxide, chemicals:**

|                 |   |                                    |
|-----------------|---|------------------------------------|
| Exposure routes | : | Skin                               |
| Species         | : | Other                              |
| Result          | : | Does not cause skin sensitisation. |

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

|                 |   |                                    |
|-----------------|---|------------------------------------|
| Exposure routes | : | Skin                               |
| Species         | : | Guinea pig                         |
| Method          | : | OECD Test Guideline 406            |
| Result          | : | Does not cause skin sensitisation. |

**melamine:**

|                 |   |                                    |
|-----------------|---|------------------------------------|
| Exposure routes | : | Skin                               |
| Species         | : | Guinea pig                         |
| Method          | : | OECD Test Guideline 406            |
| Result          | : | Does not cause skin sensitisation. |

**Germ cell mutagenicity****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

|                       |   |                                                                                 |
|-----------------------|---|---------------------------------------------------------------------------------|
| Genotoxicity in vitro | : | Metabolic activation: with and without metabolic activation<br>Result: positive |
|-----------------------|---|---------------------------------------------------------------------------------|

Concentration: 0 - 5000 ug/plate

Metabolic activation: with and without metabolic activation

Result: positive

|                      |   |                                                                |
|----------------------|---|----------------------------------------------------------------|
| Genotoxicity in vivo | : | Cell type: Germ<br>Application Route: Oral<br>Result: negative |
|----------------------|---|----------------------------------------------------------------|

Cell type: Somatic

Application Route: Oral

Dose: 0 - 5000 mg/kg

Result: negative

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

|                       |   |                                                                                                                    |
|-----------------------|---|--------------------------------------------------------------------------------------------------------------------|
| Genotoxicity in vitro | : | Metabolic activation: with and without metabolic activation<br>Method: OECD Test Guideline 476<br>Result: positive |
|-----------------------|---|--------------------------------------------------------------------------------------------------------------------|

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: positive

|                      |   |                                                                                                     |
|----------------------|---|-----------------------------------------------------------------------------------------------------|
| Genotoxicity in vivo | : | Application Route: Intraperitoneal injection<br>Method: OECD Test Guideline 474<br>Result: positive |
|----------------------|---|-----------------------------------------------------------------------------------------------------|

Application Route: Intraperitoneal injection

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Dose: 1600 mg/kg  
Result: negative

Application Route: Oral  
Result: negative

**melamine:**

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Method: Chromosome aberration test in vitro  
Result: negative

Metabolic activation: with and without metabolic activation  
Method: In vitro mammalian cell gene mutation test  
Result: negative

Genotoxicity in vivo : Application Route: Intraperitoneal injection  
Method: Skin Sensitization  
Result: negative

**Carcinogenicity****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

Species : Rat, male and female  
Application Route : Oral  
Exposure time : 24 month(s)  
Dose : 15 mg/kg  
Frequency of Treatment : 7 daily  
Method : OECD Test Guideline 453  
Result : negative

Species : Mouse, male  
Application Route : Dermal  
Exposure time : 24 month(s)  
Dose : .1 mg/kg  
Frequency of Treatment : 3 daily  
Method : OECD Test Guideline 453  
Result : negative

Species : Rat, female  
Application Route : Dermal  
Exposure time : 24 month(s)  
Dose : 1 mg/kg  
Frequency of Treatment : 5 daily  
Method : OECD Test Guideline 453  
Result : negative

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Species : Mouse, male  
Application Route : Dermal  
Exposure time : 482 days  
Dose : 5 mg/kg  
Frequency of Treatment : 3 daily  
Result : negative

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|-------------|-----------------------------------------------------------------------------------------------------------------------------------------|------------|
| <b>IARC</b> | Group 2A: Probably carcinogenic to humans<br>Glass, oxide, chemicals<br>(glass)                                                         | 65997-17-3 |
|             | Group 2B: Possibly carcinogenic to humans<br>Glass, oxide, chemicals<br>(special-purpose fibres)                                        | 65997-17-3 |
|             | Group 2B: Possibly carcinogenic to humans<br>melamine                                                                                   | 108-78-1   |
| <b>OSHA</b> | No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.                |            |
| <b>NTP</b>  | No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP. |            |

**Reproductive toxicity****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

|                               |                                                                                                                                                                                     |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on fertility          | : Species: Rat, male and female<br>Application Route: Oral<br>Method: OECD Test Guideline 416<br>Result: No effects on fertility and early embryonic development were detected.     |
| Effects on foetal development | : Species: Rabbit, female<br>Application Route: Dermal<br>General Toxicity Maternal: NOAEL: 30 mg/kg body weight<br>Result: No teratogenic effects                                  |
|                               | : Species: Rabbit, female<br>Application Route: Oral<br>General Toxicity Maternal: NOAEL: 60 mg/kg body weight<br>Method: OECD Test Guideline 414<br>Result: No teratogenic effects |
|                               | : Species: Rat, female<br>Application Route: Oral<br>General Toxicity Maternal: NOAEL: 180 mg/kg body weight<br>Method: OECD Test Guideline 414<br>Result: No teratogenic effects   |

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

|                               |                                                                                                                                                                                 |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Effects on fertility          | : Species: Rat, male and female<br>Application Route: Oral<br>Method: OECD Test Guideline 415<br>Result: No effects on fertility and early embryonic development were detected. |
| Effects on foetal development | : Species: Rabbit, female<br>Application Route: Oral<br>General Toxicity Maternal: NOAEL: 200 mg/kg body weight<br>Method: OECD Test Guideline 414                              |

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Result: No teratogenic effects

**melamine:**

Effects on foetal development : Species: Rat, female  
Application Route: Oral  
General Toxicity Maternal: NOAEL: 600 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: No teratogenic effects

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

**Repeated dose toxicity****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

Species : Rat, male and female  
NOAEL : 50 mg/kg  
Application Route : Ingestion  
Exposure time : 14 Weeks  
Number of exposures : 7 d  
Method : Subchronic toxicity

Species : Rat, male and female  
NOEL : 10 mg/kg  
Application Route : Skin contact  
Exposure time : 13 Weeks  
Number of exposures : 5 d  
Method : Subchronic toxicity

Species : Mouse, male  
NOAEL : 100 mg/kg  
Application Route : Skin contact  
Exposure time : 13 Weeks  
Number of exposures : 3 d  
Method : Subchronic toxicity

**Glass, oxide, chemicals:**

Species : Rat, male  
LOEC : 2.4 mg/m<sup>3</sup>  
Test atmosphere : dust/mist  
Exposure time : 2,160 h  
Number of exposures : 6 h  
Method : Directive 67/548/EEC, Annex, B.29

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Species : Rat, male and female  
NOEC : > 1000 mg/m<sup>3</sup>  
Application Route : Inhalation  
Test atmosphere : dust/mist  
Exposure time : 672 h

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Number of exposures : 5 d  
Method : OECD Test Guideline 412

Species : Rat, male and female  
NOAEL : 1000 mg/kg/d  
Application Route : Ingestion  
Exposure time : 2,160 h  
Number of exposures : 7 d  
Method : Subchronic toxicity

**melamine:**

Species : Rat, male and female  
LOAEL : 72 mg/kg  
Application Route : Ingestion  
Exposure time : 13 Weeks  
Method : Subchronic toxicity

**Aspiration toxicity**

No data available

**Experience with human exposure**

No data available

**Toxicology, Metabolism, Distribution**

No data available

**Neurological effects**

No data available

**Further information**

No data available

**SECTION 12. ECOLOGICAL INFORMATION****Ecotoxicity****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 1.5 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 203

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 1.7 mg/l  
aquatic invertebrates  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

EC50 (Daphnia magna (Water flea)): 2.7 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water

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Toxicity to algae/aquatic plants : EC50 (Selenastrum capricornutum (green algae)): 9.4 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water

Toxicity to fish (Chronic toxicity) : GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 211

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l  
Exposure time: 3 h  
Test Type: static test  
Test substance: Fresh water

**Glass, oxide, chemicals:**

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 1,000 mg/l  
Exposure time: 96 h  
Test Type: Other guidelines  
Test substance: Fresh water  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
Exposure time: 72 h  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EgC50 (Selenastrum capricornutum (green algae)): > 1,000 mg/l  
Exposure time: 72 h  
Test Type: semi-static test  
Method: OECD Test Guideline 201

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 55 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.1.

Toxicity to daphnia and other aquatic invertebrates : LC50: 324 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water

Toxicity to algae/aquatic plants : EC50: 119 mg/l  
Exposure time: 168 h  
Test Type: static test  
Test substance: Fresh water

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Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)):  $\geq 100$  mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Test substance: Fresh water  
Method: OECD Test Guideline 211

**Ecotoxicology Assessment**

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

**melamine:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)):  $> 3,000$  mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Test substance: Fresh water

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)):  $> 1,000$  mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: Aquatic Invertebrate Acute Toxicity Test, Freshwater Daphnids

Toxicity to algae/aquatic plants : EC50 (Selenastrum capricornutum (green algae)): 325 mg/l  
Exposure time: 96 h  
Test Type: static test  
Test substance: Fresh water

Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 1,500 mg/l  
Exposure time: 28 d  
Test Type: semi-static test  
Test substance: Fresh water

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 18 mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Test substance: Fresh water

**Persistence and degradability****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

Biodegradability : Inoculum: Sewage (STP effluent)  
Concentration: 20 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 5 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F

Stability in water : Degradation half life (DT50): 4.83 d (25 °C) pH: 4  
Method: OECD Test Guideline 111  
Remarks: Fresh water

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Degradation half life (DT50): 7.1 d (25 °C) pH: 9  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Degradation half life (DT50): 3.58 d (25 °C) pH: 7  
Method: OECD Test Guideline 111  
Remarks: Fresh water

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Biodegradability : Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 37 %  
Exposure time: 28 d  
Method: Directive 67/548/EEC Annex V, C.4.A.

Stability in water : Degradation half life (DT50): 6.5 hrs (24.5 °C) pH: 7  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Degradation half life (DT50): 0.15 hrs (24.5 °C) pH: 5  
Method: OECD Test Guideline 111  
Remarks: Fresh water

Degradation half life (DT50): 0.13 hrs (24.5 °C) pH: 9  
Method: OECD Test Guideline 111  
Remarks: Fresh water

**melamine:**

Biodegradability : Inoculum: activated sludge  
Concentration: 100 mg/l  
Result: Not readily biodegradable.  
Biodegradation: < 10 %  
Exposure time: 28 d  
Method: OECD Test Guideline 302B

**Bioaccumulative potential****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

Bioaccumulation : Bioconcentration factor (BCF): 31  
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 3.242 (77 °F / 25 °C)  
pH: 7.1  
Method: OECD Test Guideline 117

**[3-(2,3-epoxypropoxy)propyl]trimethoxysilane:**

Partition coefficient: n-octanol/water : log Pow: -2.6 (77 °F / 25 °C)

**melamine:**

Bioaccumulation : Bioconcentration factor (BCF): 0.05

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Partition coefficient: n-octanol/water : log Pow: -1.22 (68 °F / 20 °C)  
pH: 8  
Method: Partition coefficient

**Mobility in soil****Components:****Phenol, polymer with formaldehyde, glycidyl ether:**

Distribution among environmental compartments : Koc: 445

**melamine:**

Distribution among environmental compartments : Koc: 1.7

**Other adverse effects****Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82  
Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Toxic to aquatic life with long lasting effects.

**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**

Waste from residues : Dispose of contents and container in accordance with all local, regional, national and international regulations.  
Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with chemical or used container.

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

**SECTION 14. TRANSPORT INFORMATION****International Regulations****IATA-DGR**

UN/ID No. : UN 3082  
Proper shipping name : Environmentally hazardous substance, liquid, n.o.s.  
(EPOXY PHENOL NOVOLAC RESIN)

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|                                          |   |               |
|------------------------------------------|---|---------------|
| Class                                    | : | 9             |
| Packing group                            | : | III           |
| Labels                                   | : | Miscellaneous |
| Packing instruction (cargo aircraft)     | : | 964           |
| Packing instruction (passenger aircraft) | : | 964           |
| Environmentally hazardous                | : | yes           |

**IMDG-Code**

|                      |   |                                                                                  |
|----------------------|---|----------------------------------------------------------------------------------|
| UN number            | : | UN 3082                                                                          |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (EPOXY PHENOL NOVOLAC RESIN) |

|                  |   |          |
|------------------|---|----------|
| Class            | : | 9        |
| Packing group    | : | III      |
| Labels           | : | 9        |
| EmS Code         | : | F-A, S-F |
| Marine pollutant | : | yes      |

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**National Regulations****49 CFR**

|                      |   |                                                                                                                                                                                     |
|----------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| UN/ID/NA number      | : | UN 3082                                                                                                                                                                             |
| Proper shipping name | : | Environmentally hazardous substance, liquid, n.o.s. (EPOXY PHENOL NOVOLAC RESIN)                                                                                                    |
| Class                | : | 9                                                                                                                                                                                   |
| Packing group        | : | III                                                                                                                                                                                 |
| Labels               | : | CLASS 9                                                                                                                                                                             |
| ERG Code             | : | 171                                                                                                                                                                                 |
| Marine pollutant     | : | yes                                                                                                                                                                                 |
| Remarks              | : | Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO. |

**Special precautions for user**

|         |   |                                                |
|---------|---|------------------------------------------------|
| Remarks | : | 49CFR: no dangerous good in non-bulk packaging |
|---------|---|------------------------------------------------|

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

**SECTION 15. REGULATORY INFORMATION****CERCLA Reportable Quantity**

Listed substances in the product are at low enough levels to not be expected to exceed the RQ

|                             |   |                                                                                                           |
|-----------------------------|---|-----------------------------------------------------------------------------------------------------------|
| <b>SARA 311/312 Hazards</b> | : | Skin corrosion or irritation<br>Serious eye damage or eye irritation<br>Respiratory or skin sensitisation |
|-----------------------------|---|-----------------------------------------------------------------------------------------------------------|

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**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

**California Prop. 65**

WARNING: This product can expose you to chemicals including 2,3-epoxypropyl phenyl ether, which is/are known to the State of California to cause cancer, and methanol, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

**The components of this product are reported in the following inventories:**

|       |                                                          |
|-------|----------------------------------------------------------|
| DSL   | : All components of this product are on the Canadian DSL |
| AIIC  | : On the inventory, or in compliance with the inventory  |
| NZIoC | : Not in compliance with the inventory                   |
| ENCS  | : On the inventory, or in compliance with the inventory  |
| KECI  | : On the inventory, or in compliance with the inventory  |
| PICCS | : On the inventory, or in compliance with the inventory  |
| IECSC | : On the inventory, or in compliance with the inventory  |
| TCSI  | : On the inventory, or in compliance with the inventory  |
| TSCA  | : All substances listed as active on the TSCA inventory  |

**Inventories**

AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TECI (Thailand), TSCA (USA)

**TSCA - 5(a) Significant New Use Rule List of Chemicals**

No substances are subject to a Significant New Use Rule.

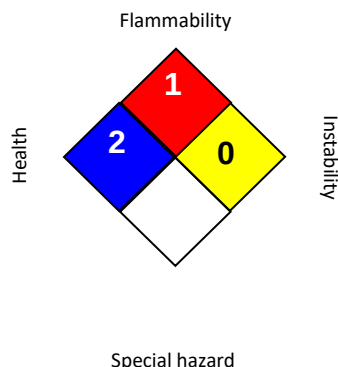
**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**

No substances are subject to TSCA 12(b) export notification requirements.

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**SECTION 16. OTHER INFORMATION****Further information****NFPA 704:****HMIS® IV:**

|                        |  |          |
|------------------------|--|----------|
| <b>HEALTH</b>          |  | <b>2</b> |
| <b>FLAMMABILITY</b>    |  | <b>1</b> |
| <b>PHYSICAL HAZARD</b> |  | <b>0</b> |

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "\*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard

Revision Date : 04/11/2022

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IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**HUNTSMAN**

Enriching lives through innovation

## HARDENER 252-2

|         |                |              |                                 |
|---------|----------------|--------------|---------------------------------|
| Version | Revision Date: | SDS Number:  | Date of last issue: 05.06.2020  |
| 3.0     | 05.05.2023     | 400000002319 | Date of first issue: 31.03.2016 |

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

#### 1.1 Product identifier

Trade name : HARDENER 252-2

Unique Formula Identifier (UFI) : HPQF-80UM-Q00M-99DG

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

Use of the Substance/Mixture : Hardener

#### 1.3 Details of the supplier of the safety data sheet

Company : Huntsman Advanced Materials (Europe) BV

Address : Everslaan 45  
3078 Everberg  
Belgium

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 number

Emergency telephone number : Berlin: 0049 30 19 24 0 & 0049 30 30 68 6 7 11  
Bonn: 0049 228 19 27 0 & 0049 228 28 7 3 32 11  
Erfurt: 0049 361 73 07 30  
Freiburg: 0049 761 16 24 0  
Göttingen: 0049 51 19 24 0 & 0049 551 38 31 80  
Homburg: 0049 6841 19 24 0  
Mainz: 0049 6131 19 24 0 & 0049 6131 23 24 66  
München: 0049 89 19 24 0  
Nürnberg: 0049 911 39 8 2 45 1  
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

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

**Classification (REGULATION (EC) No 1272/2008)**

Skin corrosion, Sub-category 1B H314: Causes severe skin burns and eye damage.

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|                                                |                                                             |
|------------------------------------------------|-------------------------------------------------------------|
| Serious eye damage, Category 1                 | H318: Causes serious eye damage.                            |
| Skin sensitisation, Category 1                 | H317: May cause an allergic skin reaction.                  |
| Short-term (acute) aquatic hazard, Category 1  | H400: Very toxic to aquatic life.                           |
| Long-term (chronic) aquatic hazard, Category 1 | H410: Very toxic to aquatic life with long lasting effects. |

### 2.2 Label elements

#### Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements :  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :  
**Prevention:**  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.  
**Response:**  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.  
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.  
P391 Collect spillage.

#### Hazardous components which must be listed on the label:

Reaction products of fatty acids, C18 (unsaturated) alkyl and epoxidized fatty esters, with amines polyethylenepoly-, tetraethylenepentamine  
3-aminopropyltriethoxysilane

### 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.

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Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher

### SECTION 3: Composition/information on ingredients

#### 3.2 Mixtures

Chemical nature : Polyamines

#### Hazardous components

| Chemical name                                                                                                                                | CAS-No.<br>EC-No.<br>Index-No.<br>Registration number     | Classification                                                                                                                                                                                              | Concentration<br>(% w/w) |
|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Reaction products of fatty acids, C18 (unsaturated) alkyl and epoxidized fatty esters, with amines polyethylenepoly-, tetraethylenepentamine | Not Assigned<br>-<br>01-2120925686-44                     | Skin Corr. 1B; H314<br>Eye Dam. 1; H318<br>Skin Sens. 1; H317<br>Aquatic Acute 1; H400<br>Aquatic Chronic 1; H410<br><br>M-Factor (Acute aquatic toxicity): 100<br>M-Factor (Chronic aquatic toxicity): 100 | >= 50 -<br>< 70          |
| 3-aminopropyltriethoxysilane                                                                                                                 | 919-30-2<br>213-048-4<br>612-108-00-0<br>01-2119480479-24 | Acute Tox. 4; H302<br>Skin Corr. 1B; H314<br>Eye Dam. 1; H318<br>Skin Sens. 1B; H317<br><br>Acute toxicity estimate<br><br>Acute oral toxicity:<br>1 491 mg/kg                                              | >= 0,1 -<br>< 1          |

For explanation of abbreviations see section 16.

### SECTION 4: First aid measures

#### 4.1 Description of first aid measures

General advice : Move out of dangerous area.  
Consult a physician.  
Show this safety data sheet to the doctor in attendance.  
Treat symptomatically.  
Get medical attention if symptoms occur.

Protection of first-aiders : First Aid responders should pay attention to self-protection

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and use the recommended protective clothing  
If potential for exposure exists refer to Section 8 for specific personal protective equipment.  
Avoid inhalation, ingestion and contact with skin and eyes.  
No action shall be taken involving any personal risk or without suitable training.  
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

- |                         |   |                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| If inhaled              | : | If inhaled, remove to fresh air.<br>Get medical attention if symptoms occur.                                                                                                                                                                                                                                                                                         |
| In case of skin contact | : | Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.<br>If on skin, rinse well with water.<br>If on clothes, remove clothes.                                                                                                                                                                     |
| In case of eye contact  | : | Small amounts splashed into eyes can cause irreversible tissue damage and blindness.<br>In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.<br>Continue rinsing eyes during transport to hospital.<br>Remove contact lenses.<br>Keep eye wide open while rinsing.<br>If eye irritation persists, consult a specialist. |
| If swallowed            | : | Keep respiratory tract clear.<br>Do NOT induce vomiting.<br>Never give anything by mouth to an unconscious person.<br>If symptoms persist, call a physician.<br>Take victim immediately to hospital.                                                                                                                                                                 |

### 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

Treatment : Treat symptomatically.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing media : Water spray  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire

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### 5.2 Special hazards arising from the substance or mixture

|                                      |   |                                                                           |
|--------------------------------------|---|---------------------------------------------------------------------------|
| Specific hazards during firefighting | : | Do not allow run-off from fire fighting to enter drains or water courses. |
| Hazardous combustion products        | : | Carbon oxides                                                             |

### 5.3 Advice for firefighters

|                                               |   |                                                                                                                                                                                                                         |
|-----------------------------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Special protective equipment for firefighters | : | Wear self-contained breathing apparatus for firefighting if necessary.                                                                                                                                                  |
| Specific extinguishing methods                | : | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.                                                                                                                 |
| Further information                           | : | Collect contaminated fire extinguishing water separately. This must not be discharged into drains.<br>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.<br>Refer to protective measures listed in sections 7 and 8. |
|----------------------|---|------------------------------------------------------------------------------------------------|

### 6.2 Environmental precautions

|                           |   |                                                                                                                                                                                         |
|---------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Environmental precautions | : | Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>If the product contaminates rivers and lakes or drains inform respective authorities. |
|---------------------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 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).<br>Keep in suitable, closed containers for disposal. |
|-------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 6.4 Reference to other sections

For disposal considerations see section 13., See Section 1 for emergency contact information., For personal protection see section 8.

## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

|                         |   |                                                                                                                                                                                                                                                       |
|-------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Advice on safe handling | : | Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons.<br>Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product. |
|-------------------------|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

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Do not breathe vapours/dust.  
Avoid exposure - obtain special instructions before use.  
Avoid contact with skin and eyes.  
For personal protection see section 8.  
Smoking, eating and drinking should be prohibited in the application area.  
To avoid spills during handling keep bottle on a metal tray.  
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 : When using do not eat or drink. When using do not 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 container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Keep in properly labelled containers.

Advice on common storage : For incompatible materials please refer to Section 10 of this SDS.

Storage class (TRGS 510) : 8A

Recommended storage temperature : 2 - 40 °C

Further information on storage stability : Stable under normal conditions.

### 7.3 Specific end use(s)

Specific use(s) : No data available

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

Contains no substances with occupational exposure limit values.

**Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:**

| Substance name               | End Use | Exposure routes | Potential health effects              | Value     |
|------------------------------|---------|-----------------|---------------------------------------|-----------|
| 3-aminopropyltriethoxysilane | Workers | Inhalation      | Long-term systemic effects            | 59 mg/m3  |
|                              | Workers | Inhalation      | Systemic effects, Short-term exposure | 59 mg/m3  |
|                              | Workers | Dermal          | Long-term systemic                    | 8,3 mg/kg |

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|  |           |            | effects                                  | bw/day              |
|--|-----------|------------|------------------------------------------|---------------------|
|  | Workers   | Dermal     | Systemic effects,<br>Short-term exposure | 8,3 mg/kg<br>bw/day |
|  | Consumers | Inhalation | Long-term systemic<br>effects            | 17,4 mg/m3          |
|  | Consumers | Inhalation | Systemic effects,<br>Short-term exposure | 17,4 mg/m3          |
|  | Consumers | Dermal     | Long-term systemic<br>effects            | 5 mg/kg<br>bw/day   |
|  | Consumers | Dermal     | Systemic effects,<br>Short-term exposure | 5 mg/kg<br>bw/day   |

### Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

| Substance name               | Environmental Compartment  | Value                           |
|------------------------------|----------------------------|---------------------------------|
| 3-aminopropyltriethoxysilane | Fresh water                | 0,33 mg/l                       |
|                              | Remarks:Assessment Factors |                                 |
|                              | Marine water               | 0,033 mg/l                      |
|                              | Remarks:Assessment Factors |                                 |
|                              | Sewage treatment plant     | 13 mg/l                         |
|                              | Remarks:Assessment Factors |                                 |
|                              | Fresh water sediment       | 1,2 mg/kg dry<br>weight (d.w.)  |
|                              | Remarks:Equilibrium method |                                 |
|                              | Marine sediment            | 0,12 mg/kg dry<br>weight (d.w.) |
|                              | Remarks:Equilibrium method |                                 |
|                              | Soil                       | 0,05 mg/kg dry<br>weight (d.w.) |
|                              | Remarks:Equilibrium method |                                 |

## 8.2 Exposure controls

### Personal protective equipment

Eye/face protection : Eye wash bottle with pure water  
Tightly fitting safety goggles  
Wear face-shield and protective suit for abnormal processing problems.

### Hand protection

Material : butyl-rubber  
Break through time : > 8 h

Material : Nitrile rubber  
Break through time : 10 - 480 min

Material : Ethyl Vinyl Alcohol Laminate (EVAL)  
Break through time : > 8 h

Remarks : The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough. Take note of the information given by the producer concerning permeability and break through times,

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and of special workplace conditions (mechanical strain, duration of contact).  
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. The suitability for a specific workplace should be discussed with the producers of the protective gloves.

|                          |   |                                                                                                                                                                                |
|--------------------------|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Skin and body protection | : | Impervious clothing<br>Choose body protection according to the amount and concentration of the dangerous substance at the work place.                                          |
| 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

|                                                  |   |                                             |
|--------------------------------------------------|---|---------------------------------------------|
| Physical state                                   | : | paste                                       |
| Colour                                           | : | off-white                                   |
| Odour                                            | : | amine-like                                  |
| Odour Threshold                                  | : | No data is available on the product itself. |
| pH                                               | : | substance/mixture is non-soluble (in water) |
| Melting point/freezing point                     | : | No data is available on the product itself. |
| Boiling point                                    | : | > 200 °C<br>Method: estimated               |
| Flash point                                      | : | > 93 °C<br>Method: estimated, closed cup    |
| Flammability (solid, gas)                        | : | No data is available on the product itself. |
| Upper explosion limit / Upper flammability limit | : | No data is available on the product itself. |
| Lower explosion limit / Lower flammability limit | : | No data is available on the product itself. |
| Vapour pressure                                  | : | No data is available on the product itself. |
| Relative vapour density                          | : | No data is available on the product itself. |
| Relative density                                 | : | No data is available on the product itself. |

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|                                        |                                               |
|----------------------------------------|-----------------------------------------------|
| Density                                | : ca. 0,546 g/cm <sup>3</sup> (23 °C)         |
| Solubility(ies)                        |                                               |
| Water solubility                       | : insoluble                                   |
| Solubility in other solvents           | : No data is available on the product itself. |
| Partition coefficient: n-octanol/water | : No data is available on the product itself. |
| Auto-ignition temperature              | : No data is available on the product itself. |
| Decomposition temperature              | : > 150 °C<br>Method: estimated               |
| Viscosity                              | : No data is available on the product itself. |

### 9.2 Other information

No data available

## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No dangerous reaction known under conditions of normal use.

### 10.2 Chemical stability

Stable under normal conditions.

### 10.3 Possibility of hazardous reactions

Hazardous reactions : No hazards to be specially mentioned.

### 10.4 Conditions to avoid

Conditions to avoid : None known.

### 10.5 Incompatible materials

Materials to avoid : Strong acids and strong bases  
Strong oxidizing agents  
  
None known.

### 10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.  
Hazardous decomposition products : Nitrogen oxides (NO<sub>x</sub>)  
carbon dioxide  
carbon monoxide  
ammonia, anhydrous  
Aldehydes  
Ketones

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### SECTION 11: Toxicological information

#### 11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

##### Acute toxicity

##### Components:

##### 3-aminopropyltriethoxysilane:

|                           |   |                                                                                                                                                   |
|---------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------|
| Acute oral toxicity       | : | LD50 (Rat, male and female): 1 491 - 2 688 mg/kg<br>Method: Acute Oral Toxicity                                                                   |
|                           |   | Acute toxicity estimate: 1 491 mg/kg<br>Method: Calculation method                                                                                |
| Acute inhalation toxicity | : | LC50 (Rat, male): > 5 ppm<br>Exposure time: 6 h<br>Test atmosphere: vapour<br>Method: OECD Test Guideline 403                                     |
| Acute dermal toxicity     | : | LD50 (Rabbit, male and female): 4 075 mg/kg<br>Method: Acute Dermal Toxicity<br>Assessment: The substance or mixture has no acute dermal toxicity |

##### Skin corrosion/irritation

##### Components:

Reaction products of fatty acids, C18 (unsaturated) alkyl and epoxidized fatty esters, with amines polyethylenepoly-, tetraethylenepentamine:

|            |   |                                     |
|------------|---|-------------------------------------|
| Species    | : | reconstructed human epidermis (RhE) |
| Assessment | : | Causes burns.                       |
| Method     | : | OECD Test Guideline 431             |
| Result     | : | Causes burns.                       |
| GLP        | : | yes                                 |

|            |   |                                     |
|------------|---|-------------------------------------|
| Species    | : | reconstructed human epidermis (RhE) |
| Assessment | : | Corrosive                           |
| Method     | : | OECD Test Guideline 431             |
| Result     | : | Corrosive                           |
| GLP        | : | yes                                 |

##### 3-aminopropyltriethoxysilane:

|         |   |                         |
|---------|---|-------------------------|
| Species | : | Rabbit                  |
| Method  | : | OECD Test Guideline 404 |
| Result  | : | Causes burns.           |

##### Serious eye damage/eye irritation

##### Components:

Reaction products of fatty acids, C18 (unsaturated) alkyl and epoxidized fatty esters, with amines polyethylenepoly-, tetraethylenepentamine:

|            |   |                                 |
|------------|---|---------------------------------|
| Assessment | : | Risk of serious damage to eyes. |
|------------|---|---------------------------------|

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Result : Risk of serious damage to eyes.

### 3-aminopropyltriethoxysilane:

Species : Rabbit  
Method : OECD Test Guideline 405  
Result : Risk of serious damage to eyes.

### Respiratory or skin sensitisation

#### Components:

Reaction products of fatty acids, C18 (unsaturated) alkyl and epoxidized fatty esters, with amines polyethylenepoly-, tetraethylenepentamine:

Assessment : May cause sensitisation by skin contact.  
Result : May cause sensitisation by skin contact.

### 3-aminopropyltriethoxysilane:

Exposure routes : Skin  
Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : The product is a skin sensitiser, sub-category 1B.

### Germ cell mutagenicity

#### Components:

Reaction products of fatty acids, C18 (unsaturated) alkyl and epoxidized fatty esters, with amines polyethylenepoly-, tetraethylenepentamine:

Genotoxicity in vitro : Test Type: reverse mutation assay  
Test system: Salmonella tryphimurium and E. coli  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 471  
Result: negative  
GLP: yes

### 3-aminopropyltriethoxysilane:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative  
  
Genotoxicity in vivo : Application Route: Intraperitoneal injection  
Method: OECD Test Guideline 474  
Result: negative

### Carcinogenicity

No data available

### Reproductive toxicity

No data available

### STOT - single exposure

No data available

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### STOT - repeated exposure

No data available

### Repeated dose toxicity

#### Components:

#### 3-aminopropyltriethoxysilane:

|                   |   |                      |
|-------------------|---|----------------------|
| Species           | : | Rat, male and female |
| NOAEL             | : | 200 mg/kg            |
| Application Route | : | Ingestion            |
| Exposure time     | : | 2 160 h              |
| Method            | : | Subchronic toxicity  |

### Aspiration toxicity

No data available

## 11.2 Information on other hazards

### Endocrine disrupting properties

#### Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher

### Experience with human exposure

No data available

### Toxicology, Metabolism, Distribution

No data available

### Neurological effects

No data available

### Further information

No data available

## SECTION 12: Ecological information

### 12.1 Toxicity

#### Components:

Reaction products of fatty acids, C18 (unsaturated) alkyl and epoxidized fatty esters, with amines polyethylenepoly-, tetraethylenepentamine:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0,34 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: semi-static test  
Analytical monitoring: yes  
Test substance: Fresh water  
Method: OECD Test Guideline 202  
GLP: yes

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Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 0,0027 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
Test substance: Fresh water  
Method: OECD Test Guideline 201  
GLP: yes

NOECr (Pseudokirchneriella subcapitata (green algae)): 0,0013 mg/l  
Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
Test substance: Fresh water  
Method: OECD Test Guideline 201  
GLP: yes

M-Factor (Acute aquatic toxicity) : 100

M-Factor (Chronic aquatic toxicity) : 100

### 3-aminopropyltriethoxysilane:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 934 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)): 331 mg/l  
Exposure time: 48 h  
Test Type: static test  
Test substance: Fresh water  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 1 000 mg/l  
Exposure time: 72 h  
Test Type: static test  
Test substance: Fresh water  
Method: Directive 67/548/EEC, Annex V, C.3.

Toxicity to microorganisms : EC50 (Pseudomonas putida): 43 mg/l  
Exposure time: 5,75 h  
Test Type: static test  
Test substance: Fresh water

## 12.2 Persistence and degradability

### Components:

Reaction products of fatty acids, C18 (unsaturated) alkyl and epoxidized fatty esters, with amines polyethylenepoly-, tetraethylenepentamine:

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Biodegradability : Test Type: aerobic  
Inoculum: Sewage (STP effluent)  
Concentration: 30 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 0 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301F  
Test substance: Fresh water  
GLP: yes

### 3-aminopropyltriethoxysilane:

Biodegradability : Inoculum: activated sludge  
Concentration: 8,95 mg/l  
Result: Not readily biodegradable.  
Biodegradation: 67 %  
Exposure time: 28 d  
Method: Directive 67/548/EEC Annex V, C.4.A.

## 12.3 Bioaccumulative potential

### Components:

Reaction products of fatty acids, C18 (unsaturated) alkyl and epoxidized fatty esters, with amines polyethylenepoly-, tetraethylenepentamine:

Partition coefficient: n-octanol/water : Pow: 2 000 000 - 3 200 000  
log Pow: 0,30 - 6,5  
pH: 9,1  
Method: OECD Test Guideline 117  
GLP: yes

### 3-aminopropyltriethoxysilane:

Bioaccumulation : Species: Cyprinus carpio (Carp)  
Bioconcentration factor (BCF): 3,4  
Remarks: Does not bioaccumulate.

Partition coefficient: n-octanol/water : log Pow: 1,7 (20 °C)  
pH: 7

## 12.4 Mobility in soil

No data available

## 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 Endocrine disrupting properties

### Product:

Assessment : The substance/mixture does not contain components

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considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher

### 12.7 Other adverse effects

#### Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.  
Harmful to aquatic life.  
Very toxic to aquatic life with long lasting effects.  
Toxic to aquatic life with long lasting effects.

## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

Product : Dispose of contents and container in accordance with all local, regional, national and international regulations.  
Do not dispose of waste into sewer.  
Do not contaminate ponds, waterways or ditches with chemical or used container.

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

## SECTION 14: Transport information

### 14.1 UN number or ID number

|      |           |
|------|-----------|
| ADN  | : UN 2735 |
| ADR  | : UN 2735 |
| RID  | : UN 2735 |
| IMDG | : UN 2735 |
| IATA | : UN 2735 |

### 14.2 UN proper shipping name

|      |                                                          |
|------|----------------------------------------------------------|
| ADN  | : POLYAMINES, LIQUID, CORROSIVE, N.O.S. (POLYAMIDOAMINE) |
| ADR  | : POLYAMINES, LIQUID, CORROSIVE, N.O.S. (POLYAMIDOAMINE) |
| RID  | : POLYAMINES, LIQUID, CORROSIVE, N.O.S. (POLYAMIDOAMINE) |
| IMDG | : POLYAMINES, LIQUID, CORROSIVE, N.O.S. (POLYAMIDOAMINE) |
| IATA | : Polyamines, liquid, corrosive, n.o.s. (POLYAMIDOAMINE) |

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### 14.3 Transport hazard class(es)

|             | Class | Subsidiary risks |
|-------------|-------|------------------|
| <b>ADN</b>  | : 8   |                  |
| <b>ADR</b>  | : 8   |                  |
| <b>RID</b>  | : 8   |                  |
| <b>IMDG</b> | : 8   |                  |
| <b>IATA</b> | : 8   |                  |

### 14.4 Packing group

|                                          |             |
|------------------------------------------|-------------|
| <b>ADN</b>                               |             |
| Packing group                            | : II        |
| Classification Code                      | : C7        |
| Hazard Identification Number             | : 80        |
| Labels                                   | : 8         |
| <b>ADR</b>                               |             |
| Packing group                            | : II        |
| Classification Code                      | : C7        |
| Hazard Identification Number             | : 80        |
| Labels                                   | : 8         |
| Tunnel restriction code                  | : (E)       |
| <b>RID</b>                               |             |
| Packing group                            | : II        |
| Classification Code                      | : C7        |
| Hazard Identification Number             | : 80        |
| Labels                                   | : 8         |
| <b>IMDG</b>                              |             |
| Packing group                            | : II        |
| Labels                                   | : 8         |
| EmS Code                                 | : F-A, S-B  |
| <b>IATA (Cargo)</b>                      |             |
| Packing instruction (cargo aircraft)     | : 855       |
| Packing instruction (LQ)                 | : Y840      |
| Packing group                            | : II        |
| Labels                                   | : Corrosive |
| <b>IATA (Passenger)</b>                  |             |
| Packing instruction (passenger aircraft) | : 851       |
| Packing instruction (LQ)                 | : Y840      |
| Packing group                            | : II        |
| Labels                                   | : Corrosive |

### 14.5 Environmental hazards

|                           |       |
|---------------------------|-------|
| <b>ADN</b>                |       |
| Environmentally hazardous | : yes |
| <b>ADR</b>                |       |
| Environmentally hazardous | : yes |
| <b>RID</b>                |       |

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Environmentally hazardous : yes

### IMDG

Marine pollutant : yes

### IATA (Passenger)

Environmentally hazardous : yes

### IATA (Cargo)

Environmentally hazardous : yes

### 14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

### 14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

## SECTION 15: Regulatory information

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

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Conditions of restriction for the following entries should be considered:  
Number on list 75, 3

If you intend to use this product as tattoo ink, please contact your vendor.

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. E1 ENVIRONMENTAL HAZARDS

Water hazard class (Germany) : WGK 3 highly hazardous to water  
Classification according to AwSV, Annex 1 (5.2)

### Other regulations:

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

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### The components of this product are reported in the following inventories:

|       |                                                                                                                                                  |
|-------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| DSL   | : This product contains one or several components that are not on the Canadian DSL nor NDSL.                                                     |
| AIIC  | : Not in compliance with the inventory                                                                                                           |
| ENCS  | : Notified. Allowed to be imported / manufactured only by the notifiers. Please contact your Huntsman sales representative for more information. |
| KECI  | : Not in compliance with the inventory                                                                                                           |
| PICCS | : Not in compliance with the inventory                                                                                                           |
| IECSC | : Notified. Allowed to be imported / manufactured only by the notifiers. Please contact your Huntsman sales representative for more information. |
| TCSI  | : Not in compliance with the inventory                                                                                                           |
| TSCA  | : Product contains substance(s) not listed on TSCA inventory.                                                                                    |

### Inventories

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

## 15.2 Chemical safety assessment

Chemical Safety Assessments for all substances in this product are either Complete or Not applicable.

## SECTION 16: Other information

### Full text of H-Statements

|      |                                                         |
|------|---------------------------------------------------------|
| H302 | : Harmful if swallowed.                                 |
| H314 | : Causes severe skin burns and eye damage.              |
| H317 | : May cause an allergic skin reaction.                  |
| H318 | : Causes serious eye damage.                            |
| H400 | : Very toxic to aquatic life.                           |
| H410 | : Very toxic to aquatic life with long lasting effects. |

### Full text of other abbreviations

|            |                  |
|------------|------------------|
| Acute Tox. | : Acute toxicity |
|------------|------------------|

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

**HUNTSMAN**

Enriching lives through innovation

## HARDENER 252-2

|         |                |              |                                 |
|---------|----------------|--------------|---------------------------------|
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|                 |                                      |
|-----------------|--------------------------------------|
| Aquatic Acute   | : Short-term (acute) aquatic hazard  |
| Aquatic Chronic | : Long-term (chronic) aquatic hazard |
| Eye Dam.        | : Serious eye damage                 |
| Skin Corr.      | : Skin corrosion                     |
| Skin Sens.      | : Skin sensitisation                 |

### Further information

#### Classification of the mixture:

|                   |      |
|-------------------|------|
| Skin Corr. 1B     | H314 |
| Eye Dam. 1        | H318 |
| Skin Sens. 1      | H317 |
| Aquatic Acute 1   | H400 |
| Aquatic Chronic 1 | H410 |

#### Classification procedure:

|                    |
|--------------------|
| Calculation method |
| Calculation method |
| Calculation method |
| Calculation method |
| Calculation method |

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