



Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 29.05.2017

Version number 5

Revision: 29.05.2017

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

- 1.1 Product identifier
- Trade name: **KRISTAL Universal TimeHardener 3.0**
- Article number: 8455
- 1.2 Relevant identified uses of the substance or mixture and uses advised against
- Sector of Use
 - SU3 Industrial uses: Uses of substances as such or in preparations at industrial sites
 - SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
- Application of the substance / the mixture Hardening agent/ Curing agent
- Uses advised against SU21 Consumer uses: Private households / general public / consumers
- 1.3 Details of the supplier of the safety data sheet
- Manufacturer/Supplier:
 - Kristal Coatings B.V.
 - Platinawerf 22B
 - 6641 TL Beuningen - Holland
 - Tel: 0031 24 67 526 36
 - Fax: 0031 24 67 533 60
- Further information obtainable from: Product safety department: info@kristalcoatings.nl
- 1.4 Emergency telephone number:
 - National Poisoning Information Centre - Bilthoven - The Netherlands
 - T +31 (0)30 274 88 88
 - Restricted to physicians for information on ingredients.

SECTION 2: Hazards identification

- 2.1 Classification of the substance or mixture
- Classification according to Regulation (EC) No 1272/2008



GHS02 flame

Flam. Liq. 2 H225 Highly flammable liquid and vapour.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.
 Eye Irrit. 2 H319 Causes serious eye irritation.
 Skin Sens. 1 H317 May cause an allergic skin reaction.
 STOT SE 3 H335 May cause respiratory irritation.

Aquatic Chronic 3 H412 Harmful to aquatic life with long lasting effects.

- 2.2 Label elements
- Labelling according to Regulation (EC) No 1272/2008
The product is classified and labelled according to the CLP regulation.
- Hazard pictograms



GHS02



GHS07

- Signal word Danger
- Hazard-determining components of labelling:
 - Hexamethylene diisocyanate, oligomers
 - 4-methylpentan-2-one
 - isophorondiisocyanate, homopolymer
 - heptan-2-one
- Hazard statements
 - H225 Highly flammable liquid and vapour.
 - H332 Harmful if inhaled.
 - H319 Causes serious eye irritation.

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H317 May cause an allergic skin reaction.

H335 May cause respiratory irritation.

H412 Harmful to aquatic life with long lasting effects.

- **Precautionary statements**

P260 Do not breathe mist/vapours/spray.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P402+P404 Store in a dry place. Store in a closed container.

- **Additional information:**

EUH066 Repeated exposure may cause skin dryness or cracking.

EUH204 Contains isocyanates. May produce an allergic reaction.

Restricted to professional users.

- **2.3 Other hazards**

- **Results of PBT and vPvB assessment**

- PBT: Not applicable.

- vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

- **3.2 Chemical characterisation: Mixtures**

- **Description:** Mixture of substances listed below with nonhazardous additions.

- **Dangerous components %(m/m):**

CAS: 28182-81-2	Hexamethylene diisocyanate, oligomers	50-75%
NLP: 500-060-2	⚠ Acute Tox. 4, H332; Skin Sens. 1, H317; STOT SE 3, H335	
Reg.nr.: 01-2119485796-17		
CAS: 108-10-1	4-methylpentan-2-one	10-25%
EINECS: 203-550-1	⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H332; Eye Irrit. 2, H319; STOT SE 3, H335	
Reg.nr.: 01-2119473980-30		
EC number: 931-312-3	isophorondiisocyanate, homopolymer	10-25%
Reg.nr.: 01-2119488734-24	⚠ Skin Sens. 1, H317; STOT SE 3, H335	
CAS: 123-86-4	n-butyl acetate	2,5-10%
EINECS: 204-658-1	⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	
Reg.nr.: 01-2119485493-29		
Reg.nr.: 01-2119455851-35	Hydrocarbons, C9, aromatics	2,5-10%
	⚠ Flam. Liq. 3, H226; ⚠ Asp. Tox. 1, H304; ⚠ Aquatic Chronic 2, H411; ⚠ STOT SE 3, H335-H336	
CAS: 110-43-0	heptan-2-one	0,5-2,5%
EINECS: 203-767-1	⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332; STOT SE 3, H336	
Reg.nr.: 01-2119902391-49		
CAS: 4083-64-1	4-isocyanatosulphonyltoluene	≤ 0,5%
EINECS: 223-810-8	⚠ Resp. Sens. 1, H334; ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	

- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

- **4.1 Description of first aid measures**

- **General information:**

Immediately remove any clothing soiled by the product.

Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

- **After inhalation:**

Supply fresh air and to be sure call for a doctor.

In case of unconsciousness place patient stably in side position for transportation.

- **After skin contact:**

Immediately wash with water and soap and rinse thoroughly.

If skin irritation continues, consult a doctor.

- **After eye contact:**

Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.

Remove contactlenses.

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- After swallowing:
Do not induce vomiting; call for medical help immediately.
Rinse out mouth and then drink plenty of water.
- 4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.
- 4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SECTION 5: Firefighting measures

- 5.1 Extinguishing media
Suitable extinguishing agents: CO₂ or powder. Fight larger fights with alcohol resistant foam.
For safety reasons unsuitable extinguishing agents: Water with full jet
- 5.2 Special hazards arising from the substance or mixture
During heating or in case of fire poisonous gases are produced.
Carbon monoxide (CO)
- 5.3 Advice for firefighters
Protective equipment: Wear self-contained respiratory protective device.

SECTION 6: Accidental release measures

- 6.1 Personal precautions, protective equipment and emergency procedures
Mount respiratory protective device.
Wear protective equipment. Keep unprotected persons away.
- 6.2 Environmental precautions:
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.
- 6.3 Methods and material for containment and cleaning up:
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Ensure adequate ventilation.
- 6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

- 7.1 Precautions for safe handling
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
Persons with a history of asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this preparation is used.
Examination of lung function should be carried out on a regular basis on persons spraying this preparation.
- Information about fire - and explosion protection:
Keep ignition sources away - Do not smoke.
Protect against electrostatic charges.
Keep respiratory protective device available.
- 7.2 Conditions for safe storage, including any incompatibilities
- Storage:
Requirements to be met by storerooms and receptacles:
Store in a cool location.
Store only in the original receptacle.
- Information about storage in one common storage facility: Store away from oxidising agents.
- Further information about storage conditions:
Caution when reopening receptacles with broken seal.
Keep container tightly sealed.
- Storage class: 3
- 7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

- Additional information about design of technical facilities: No further data; see item 7.

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· 8.1 Control parameters

· Ingredients with limit values that require monitoring at the workplace:

108-10-1 4-methylpentan-2-one

IOELV Short-term value: 208 mg/m³, 50 ppm
 Long-term value: 83 mg/m³, 20 ppm

110-43-0 heptan-2-one

IOELV Short-term value: 475 mg/m³, 100 ppm
 Long-term value: 238 mg/m³, 50 ppm
 Skin

· DNELs

28182-81-2 Hexamethylene diisocyanate, oligomers

Dermal Acute - short-term exposure - local effects 1 mg/cm² (worker)
 Inhalative Long-term exposure - systemic effects 0,5 mg/m³ (worker)

108-10-1 4-methylpentan-2-one

Dermal Long-term exposure - systemic effects 11,8 mg/kg bw/day (worker)
 Inhalative Acute - short-term exposure - systemic effects 208 mg/m³ (worker)
 Acute - short-term exposure - local effects 208 mg/m³ (worker)
 Long-term exposure - systemic effects 83 mg/m³ (worker)
 Long-term exposure - local effects 83 mg/m³ (worker)

isophorondiisocyanate, homopolymer

Inhalative Acute - short-term exposure - local effects 0,58 mg/m³ (worker)
 Long-term exposure - local effects 0,29 mg/m³ (worker)

123-86-4 n-butyl acetate

Inhalative Acute - short-term exposure - systemic effects 960 mg/m³ (worker)
 Acute - short-term exposure - local effects 960 mg/m³ (worker)
 Long-term exposure - systemic effects 480 mg/m³ (worker)
 Long-term exposure - local effects 480 mg/m³ (worker)

110-43-0 heptan-2-one

Dermal Long-term exposure - systemic effects 54,27 mg/kg bw/day (worker)
 Inhalative Acute - short-term exposure - systemic effects 1516 mg/m³ (worker)
 Long-term exposure - systemic effects 394,25 mg/m³ (worker)

· PNECs

28182-81-2 Hexamethylene diisocyanate, oligomers

PNEC 26670 mg/kg (aqua, marine water)
 53182 mg/kg (bd)
 266700 mg/kg (sediment freshwater)
 PNEC 38,28 mg/l (STP)
 0,127 mg/l (aqua, freshwater)
 1,27 mg/l (aqua, intermittent releases)
 0,0127 mg/l (aqua, marine water)

108-10-1 4-methylpentan-2-one

PNEC 0,83 mg/kg (sediment marine water)
 8,27 mg/kg (sediment freshwater)
 PNEC 27,5 mg/l (STP)
 0,6 mg/l (aqua, freshwater)
 1,5 mg/l (aqua, intermittent releases)
 0,06 mg/l (aqua, marine water)

isophorondiisocyanate, homopolymer

PNEC 0,002 mg/l (aqua, freshwater)
 0,015 mg/l (aqua, intermittent releases)
 0 mg/l (aqua, marine water)
 100 mg/l (STP)

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123-86-4 n-butyl acetate

PNEC 0,981 mg/kg (sediment freshwater)

PNEC 35,6 mg/l (STP)

0,18 mg/l (aqua, freshwater)

0,36 mg/l (aqua, intermittent releases)

0,018 mg/l (aqua, marine water)

0,0981 mg/l (sediment marine water)

110-43-0 heptan-2-one

PNEC 0,189 mg/kg (sediment marine water)

1,89 mg/kg (sediment freshwater)

0,321 mg/kg (soil)

PNEC 12,5 mg/l (STP)

0,098 mg/l (aqua, freshwater)

0,982 mg/l (aqua, intermittent releases)

0,01 mg/l (aqua, marine water)

· **Additional information:**

The lists valid during the making were used as basis.

Persons with a history of asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this preparation is used.

Examination of lung function should be carried out on a regular basis on persons spraying this preparation.

· **8.2 Exposure controls**· **Personal protective equipment:**· **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

· **Respiratory protection:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Short term filter device:

Filter A.

· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

· **Material of gloves**

Suitable materials for safety gloves (EN 374):

Polyethylene gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

· **Penetration time of glove material**Thickness of the gloves ≥ 0.06 mm (methyl isobutyl ketone)Value for the permeation: Level ≥ 480 min (methyl isobutyl ketone)

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· **Eye protection:**

Tightly sealed goggles

· **Body protection:** Solvent resistant protective clothing

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SECTION 9: Physical and chemical properties

· 9.1 Information on basic physical and chemical properties

· General Information

· Appearance:

Form: Fluid

Colour: Clear

· Odour: Characteristic

· Odour threshold: Not determined.

· pH-value: Not determined.

· Change in condition

Melting point/freezing point: Undetermined.

Initial boiling point and boiling range: 114 °C

· Flash point: 18 °C

· Flammability (solid, gas): Not applicable.

· Ignition temperature: 370 °C

· Decomposition temperature: Not determined.

· Auto-ignition temperature: Product is not selfigniting.

· Explosive properties: Product is not explosive. However, formation of explosive air/vapour mixtures are possible.

· Explosion limits:

Lower: 1,7 Vol %

Upper: 9,0 Vol %

· Vapour pressure at 20 °C: 8 hPa

· Density at 20 °C: 1,03 g/cm³

· Relative density: Not determined.

· Vapour density: Not determined.

· Evaporation rate: Not determined.

· Solubility in / Miscibility with water:

Slightly soluble.

· Partition coefficient: n-octanol/water: Not determined.

· Viscosity:

Dynamic: Not determined.

Kinematic at 20 °C: 15 s (DIN 53211/4)

· Solvent content:

Organic solvents: 31,3 %

VOC (EC) 31,26 %

Solids content: 68,6 %

· 9.2 Other information: No further relevant information available.

SECTION 10: Stability and reactivity

· 10.1 Reactivity: No further relevant information available.

· 10.2 Chemical stability

· Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.

· 10.3 Possibility of hazardous reactions

Reacts with alcohols.

Reacts with amines.

Reacts with water.

Reacts with strong oxidizing agents.

· 10.4 Conditions to avoid: High temperatures.

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- 10.5 Incompatible materials: Oxidizing agents.
- 10.6 Hazardous decomposition products: No dangerous decomposition products known.

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
- Acute toxicity
Harmful if inhaled.
- LD/LC50 values relevant for classification:
 - 108-10-1 4-methylpentan-2-one**
 - Oral LD50 2080 mg/kg (rat)
 - Dermal LD50 >2000 mg/kg (rabbit)
 - Inhalative LC50/4h 8,2-16,4 mg/l (rat)
 - 123-86-4 n-butyl acetate**
 - Oral LD50 10760 mg/kg (rat) (OECD 423)
 - Dermal LD50 >14112 mg/kg (rabbit) (OECD 402)
 - Inhalative LC50/4h 23,4 mg/l (rat) (OECD 403 in vivo, aerosol)
 - 110-43-0 heptan-2-one**
 - Oral LD50 1600 mg/kg (rat)
 - Dermal LD50 >2000 mg/kg (rabbit)
 - Inhalative LC50/4h >16,7 mg/l (rat)
 - 4083-64-1 4-isocyanatosulphonyltoluene**
 - Oral LD50 2600 mg/kg (rat)
- Primary irritant effect:
- Skin corrosion/irritation Based on available data, the classification criteria are not met.
- Serious eye damage/irritation
Causes serious eye irritation.
- Respiratory or skin sensitisation
May cause an allergic skin reaction.
- Sensitisation May cause sensitisation by skin contact.
- CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)
- Germ cell mutagenicity Based on available data, the classification criteria are not met.
- Carcinogenicity Based on available data, the classification criteria are not met.
- Reproductive toxicity Based on available data, the classification criteria are not met.
- STOT-single exposure
May cause respiratory irritation.
- STOT-repeated exposure Based on available data, the classification criteria are not met.
- Aspiration hazard Based on available data, the classification criteria are not met.

SECTION 12: Ecological information

- 12.1 Toxicity
- Aquatic toxicity:
 - 108-10-1 4-methylpentan-2-one**
 - EC50/96h 400 mg/l (algae)
 - EC50/48h >200 mg/l (daphnia magna)
 - LC50/96h >179 mg/l (fish)
 - 123-86-4 n-butyl acetate**
 - EC50/48h 44 mg/l (daphnia magna)
 - EC50/72h 647,7 mg/l (desmodesmus supspicatus)
 - IC50 356 mg/l (tetrahymena pyriformis) (40 h)
 - NOAEL/72h 200 mg/l (desmodesmus supspicatus)
 - LC50/96h 18 mg/l (pimphales promelas) (OECD 203)
 - 110-43-0 heptan-2-one**
 - ErC50/72h 98,2 mg/l (selenastrum capricornutum)
 - BOD-20 2000 mg/g (l)

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CZV 2420 mg/g (l)
LC50/96h 131 mg/l (pimphales promelas)

4083-64-1 4-isocyanatosulphonyltoluene

EC50 2511 mg/l (ac)
LC50/96h 597 mg/l (Brachydanio rerio)

· 12.2 Persistence and degradability No further relevant information available.

· Degree of elimination:

123-86-4 n-butyl acetate

OECD 301D 83 % (l) (28 d)

110-43-0 heptan-2-one

BOD/28d 69 % (l)
BOD-5 1770 mg/g (l)

· 12.3 Bioaccumulative potential No further relevant information available.

· 12.4 Mobility in soil No further relevant information available.

· Ecotoxicological effects:

· Remark: Harmful to fish

· Additional ecological information:

· General notes:

Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Harmful to aquatic organisms

· 12.5 Results of PBT and vPvB assessment

· PBT: Not applicable.

· vPvB: Not applicable.

· 12.6 Other adverse effects No further relevant information available.

SECTION 13: Disposal considerations

· 13.1 Waste treatment methods

· Recommendation Must not be disposed together with household garbage. Do not allow product to reach sewage system.

· European waste catalogue

08 01 11* waste paint and varnish containing organic solvents or other hazardous substances

· Uncleaned packaging:

· Recommendation: Disposal must be made according to official regulations.

SECTION 14: Transport information

· 14.1 UN-Number

· ADR,ADN, IMDG, IATA UN1263

· 14.2 UN proper shipping name

· ADR/ADN 1263 PAINT

· IMDG, IATA PAINT

· 14.3 Transport hazard class(es)

· ADR,ADN, IMDG, IATA



· Class 3 Flammable liquids.

· Label 3

· 14.4 Packing group

· ADR,ADN, IMDG, IATA II

· 14.5 Environmental hazards:

· Marine pollutant: No

· 14.6 Special precautions for user Warning: Flammable liquids.

· Danger code (Kemler): 33

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- EMS Number: F-E,S-E
- Stowage Category: B
- 14.7 Transport in bulk according to Annex II of Marpol and the IBC Code: Not applicable.

· Transport/Additional information:

· ADR/ADN

- Limited quantities (LQ): 5L
- Excepted quantities (EQ): Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml
- Transport category: 2
- Tunnel restriction code: D/E

· IMDG

- Limited quantities (LQ): 5L
- Excepted quantities (EQ): Code: E2
Maximum net quantity per inner packaging: 30 ml
Maximum net quantity per outer packaging: 500 ml
- UN "Model Regulation": UN 1263 PAINT, 3, II

SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- Directive 2012/18/EU
- Named dangerous substances - ANNEX I None of the ingredients is listed.
- Seveso category P5c FLAMMABLE LIQUIDS
- Qualifying quantity (tonnes) for the application of lower-tier requirements 5.000 t
- Qualifying quantity (tonnes) for the application of upper-tier requirements 50.000 t
- REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3, 20
- National regulations:
- Other regulations, limitations and prohibitive regulations
The information contained in this safety data sheet does not constitute the user's own assessment of workplace risks, as required by other health and safety legislation.
- 15.2 Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

SECTION 16: Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant phrases

- H225 Highly flammable liquid and vapour.
- H226 Flammable liquid and vapour.
- H302 Harmful if swallowed.
- H304 May be fatal if swallowed and enters airways.
- H315 Causes skin irritation.
- H317 May cause an allergic skin reaction.
- H319 Causes serious eye irritation.
- H332 Harmful if inhaled.
- H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
- H335 May cause respiratory irritation.
- H336 May cause drowsiness or dizziness.
- H411 Toxic to aquatic life with long lasting effects.

· Contact: Dhr. B. Peters

· Abbreviations and acronyms:

- RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
- IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
- ICAO: International Civil Aviation Organisation
- ICAO-TI: Technical Instructions by the "International Civil Aviation Organisation" (ICAO)
- ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
- IMDG: International Maritime Code for Dangerous Goods
- IATA: International Air Transport Association
- GHS: Globally Harmonised System of Classification and Labelling of Chemicals
- EINECS: European Inventory of Existing Commercial Chemical Substances
- ELINCS: European List of Notified Chemical Substances

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CAS: Chemical Abstracts Service (division of the American Chemical Society)
VOC: Volatile Organic Compounds (USA, EU)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Flam. Liq. 2: Flammable liquids – Category 2
Flam. Liq. 3: Flammable liquids – Category 3
Acute Tox. 4: Acute toxicity – Category 4
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2: Serious eye damage/eye irritation – Category 2
Resp. Sens. 1: Respiratory sensitisation – Category 1
Skin Sens. 1: Skin sensitisation – Category 1
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3
Asp. Tox. 1: Aspiration hazard – Category 1
Aquatic Chronic 2: Hazardous to the aquatic environment - long-term aquatic hazard – Category 2
Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard – Category 3

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