



# Safety data sheet

## according to 1907/2006/EC, Article 31

Printing date 06.07.2015

Version number 5

Revision: 06.07.2015

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

- 1.1 Product identifier
- Trade name: **KRISTAL HS Hardener 83 STD**
- Article number: 8310
- 1.2 Relevant identified uses of the substance or mixture and uses advised against  
No further relevant information available.
- Application of the substance / the mixture Hardening agent/ Curing agent
- 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. 3 H226 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-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

- 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 Warning
- Hazard-determining components of labelling:  
Hexamethylene diisocyanate, oligomers  
4-methylpentan-2-one  
isophorondiisocyanate, homopolymer  
n-butyl acetate
- Hazard statements  
H226 Flammable liquid and vapour.  
H332 Harmful if inhaled.  
H319 Causes serious eye irritation.  
H317 May cause an allergic skin reaction.  
H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.
- Precautionary statements  
P280 Wear protective gloves/protective clothing/eye protection/face protection.  
P260 Do not breathe mist/vapours/spray.

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- 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:**

CAS: 28182-81-2 NLP: 500-060-2 Reg.nr.: 01-2119485796-17	Hexamethylene diisocyanate, oligomers ⚠ Acute Tox. 4, H332; Skin Sens. 1, H317; STOT SE 3, H335	25-50%
CAS: 123-86-4 EINECS: 204-658-1 Reg.nr.: 01-2119485493-29	n-butyl acetate ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	25-50%
CAS: 108-10-1 EINECS: 203-550-1 Reg.nr.: 01-2119473980-30	4-methylpentan-2-one ⚠ Flam. Liq. 2, H225; ⚠ Acute Tox. 4, H332; Eye Irrit. 2, H319; STOT SE 3, H335	10-25%
CAS: 53880-05-0 EC number: 931-312-3 Reg.nr.: 01-2119488734-24	isophorondiisocyanate, homopolymer ⚠ Skin Sens. 1, H317; STOT SE 3, H335	10-25%
CAS: 110-43-0 EINECS: 203-767-1	heptan-2-one ⚠ Flam. Liq. 3, H226; ⚠ Acute Tox. 4, H302; Acute Tox. 4, H332; STOT SE 3, H336	2,5-10%
CAS: 64742-95-6 EINECS: 265-199-0 Reg.nr.: 01-2119455851-35	Solvent naphtha (petroleum), light arom. ⚠ Flam. Liq. 3, H226; ⚠ Asp. Tox. 1, H304; ⚠ Aquatic Chronic 2, H411; ⚠ Acute Tox. 4, H332; STOT SE 3, H335-H336	0,5-2,5%
CAS: 4083-64-1 EINECS: 223-810-8	4-isocyanatosulphonyltoluene ⚠ Resp. Sens. 1, H334; ⚠ Skin Irrit. 2, H315; Eye Irrit. 2, H319; STOT SE 3, H335	≤ 0,5%

- **Additional information:** For the wording of the listed risk 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:**

- Remove contactlenses.  
 Rinse opened eye for several minutes under running water. Then consult a doctor.

· **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.

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- 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: CO<sub>2</sub> 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 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  
Wear protective equipment. Keep unprotected persons away.
- 6.2 Environmental precautions: 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).  
Dispose contaminated material as waste according to item 13.  
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.
- 7.2 Conditions for safe storage, including any incompatibilities
- Storage:  
Requirements to be met by storerooms and receptacles: No special requirements.
- Information about storage in one common storage facility: Store away from oxidising agents.
- Further information about storage conditions:  
Protect from humidity and water.  
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.
- 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/m<sup>3</sup>, 50 ppm  
Long-term value: 83 mg/m<sup>3</sup>, 20 ppm

#### **110-43-0 heptan-2-one**

IOELV Short-term value: 475 mg/m<sup>3</sup>, 100 ppm  
Long-term value: 238 mg/m<sup>3</sup>, 50 ppm  
Skin

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**· DNELs****28182-81-2 Hexamethylene diisocyanate, oligomers**

Dermal Acute - short-term exposure - local effects 1 mg/cm<sup>2</sup> (worker)  
 Inhalative Long-term exposure - systemic effects 0,5 mg/m<sup>3</sup> (worker)

**123-86-4 n-butyl acetate**

Inhalative Acute - short-term exposure - local effects 960 mg/m<sup>3</sup> (worker)  
 Acute - short-term exposure - systemic effects 960 mg/m<sup>3</sup> (worker)  
 Long-term exposure - local effects 480 mg/m<sup>3</sup> (worker)  
 Long-term exposure - systemic effects 480 mg/m<sup>3</sup> (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 - local effects 208 mg/m<sup>3</sup> (worker)  
 Acute - short-term exposure - systemic effects 208 mg/m<sup>3</sup> (worker)  
 Long-term exposure - local effects 83 mg/m<sup>3</sup> (worker)  
 Long-term exposure - systemic effects 83 mg/m<sup>3</sup> (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/m<sup>3</sup> (worker)  
 Long-term exposure - systemic effects 394,25 mg/m<sup>3</sup> (worker)

**· PNECs****28182-81-2 Hexamethylene diisocyanate, oligomers**

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)  
 26670 mg/kg (aqua, marine water)  
 53182 mg/kg (bd)  
 266700 mg/kg (sediment freshwater)

**123-86-4 n-butyl acetate**

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)  
 0,981 mg/kg (sediment freshwater)

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

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)  
 0,83 mg/kg (sediment marine water)  
 8,27 mg/kg (sediment freshwater)

**110-43-0 heptan-2-one**

PNEC 12,5 mg/l (STP)  
 0,0982 mg/l (aqua, freshwater)  
 0,982 mg/l (aqua, intermittent releases)  
 0,00982 mg/l (aqua, marine water)  
 0,189 mg/kg (sediment marine water)  
 1,89 mg/kg (sediment freshwater)  
 0,321 mg/kg (soil)

**· 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.

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- 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.
- 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.
  - 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
  - Butyl rubber, BR
  - 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  $\geq 0.3$  mm (butylacetate)
  - Value for the permeation: Level  $\geq 60$  min (butylacetate)
  - 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

## \* SECTION 9: Physical and chemical properties

- 9.1 Information on basic physical and chemical properties
- General Information
- Appearance:
 

Form:	Fluid
Colour:	Transparent
Odour:	Characteristic
- Change in condition
  - Melting point/Melting range: Undetermined.
  - Boiling point/Boiling range: 116 °C
- Flash point: 29 °C
- Ignition temperature: 370 °C
- Self-igniting: Product is not selfigniting.
- Danger of explosion: Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
- Explosion limits:
 

Lower:	1,2 Vol %
Upper:	9,0 Vol %
- Vapour pressure at 20 °C: 10,7 hPa
- Density at 20 °C: 0,99 g/cm<sup>3</sup>

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- Solubility in / Miscibility with water: Insoluble.
- Viscosity:
  - Dynamic at 20 °C: ± 10 mPas
  - Kinematic: Not determined.
- Solvent content:
  - Organic solvents: 49,1 %
  - VOC (EC) 49,15 %
  - Solids content: 50,9 %
- 9.2 Other information No further relevant information available.

### SECTION 10: Stability and reactivity

- 10.1 Reactivity
- 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.
- 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
- LD/LC50 values relevant for classification:

#### **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)

#### **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)

#### **110-43-0 heptan-2-one**

Oral LD50 1670 mg/kg (rat)  
 Dermal LD50 12600 mg/kg (rabbit)

#### **4083-64-1 4-isocyanatosulphonyltoluene**

Oral LD50 2600 mg/kg (rat)

- Primary irritant effect:
- Skin corrosion/irritation No irritant effect.
- Serious eye damage/irritation No irritating effect.
- Respiratory or skin sensitisation Sensitisation possible through skin contact.
- Additional toxicological information:
  - The product shows the following dangers according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version:
  - Harmful
  - Irritant
- Sensitisation May cause sensitisation by skin contact.

— EU —  
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### \* SECTION 12: Ecological information

#### · 12.1 Toxicity

##### · Aquatic toxicity:

##### **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)

LC50/96h 18 mg/l (pimphales promelas) (OECD 203)

NOAEL/72h 200 mg/l (desmodesmus supspicatus)

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

EC50/48h &gt;200 mg/l (daphnia magna)

EC50/96h 400 mg/l (algae)

LC50/96h &gt;179 mg/l (fish)

##### **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)

#### · 12.3 Bioaccumulative potential No further relevant information available.

#### · 12.4 Mobility in soil No further relevant information available.

##### · 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.

#### · 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 dangerous 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

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· 14.4 Packing group	
· ADR, ADN, IMDG, IATA	III
· 14.5 Environmental hazards:	
· Marine pollutant:	No
· 14.6 Special precautions for user	Warning: Flammable liquids.
· Danger code (Kemler):	30
· EMS Number:	F-E, S-E
· 14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
-----	
· ADR/ADN	
· Limited quantities (LQ)	5L
· Transport category	3
· Tunnel restriction code	D/E
· UN "Model Regulation":	UN1263, PAINT, 3, III

### SECTION 15: Regulatory information

- 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
- 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:  
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  
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  
Flam. Liq. 2: Flammable liquids, Hazard Category 2  
Flam. Liq. 3: Flammable liquids, Hazard Category 3  
Acute Tox. 4: Acute toxicity, Hazard Category 4  
Skin Irrit. 2: Skin corrosion/irritation, Hazard Category 2  
Eye Irrit. 2: Serious eye damage/eye irritation, Hazard Category 2  
Resp. Sens. 1: Sensitisation - Respirat., Hazard Category 1  
Skin Sens. 1: Sensitisation - Skin, Hazard Category 1  
STOT SE 3: Specific target organ toxicity - Single exposure, Hazard Category 3  
Asp. Tox. 1: Aspiration hazard, Hazard Category 1  
Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2
- \* Data compared to the previous version altered.