



# SAFETY DATA SHEET

## Hardener HRP-155

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

#### 1.1 Product identifier

Product name : Hardener HRP-155

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

Use of the substance/  
mixture :  Industrial/Professional Use: Hardener. Woodworking industry.

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

Supplier : Dynea AS  
P.O.Box 160, N-2001 Lillestrøm  
Norway  
Tel. +47 63897100  
Fax. +47 63897610

e-mail address of person  
responsible for this SDS : sds@dynea.com

#### 1.4 Emergency telephone number

##### National advisory body/Poison Centre

Telephone number : Not available.

##### Supplier

Telephone number : +47 63897100

Hours of operation : 24 hours

### SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture

Product definition : Mixture

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

The product is classified as hazardous according to Regulation (EC) 1272/2008 as amended.

Flam. Sol. 2, H228  
Skin Irrit. 2, H315  
Eye Dam. 1, H318  
Skin Sens. 1, H317  
Carc. 2, H351

##### Classification according to Directive 1999/45/EC [DPD]

The product is classified as dangerous according to Directive 1999/45/EC and its amendments.

Classification : Carc. Cat. 3; R40  
Xn; R20/22  
Xi; R41, R38  
R43

## SECTION 2: Hazards identification

**Human health hazards** : Limited evidence of a carcinogenic effect. Harmful by inhalation and if swallowed. Risk of serious damage to eyes. Irritating to skin. May cause sensitisation by skin contact.

See Section 16 for the full text of the R phrases or H statements declared above.

See Section 11 for more detailed information on health effects and symptoms.

### 2.2 Label elements

**Hazard pictograms** :

**Signal word** : Danger

**Hazard statements** : H228 - Flammable solid.  
H318 - Causes serious eye damage.  
H315 - Causes skin irritation.  
H317 - May cause an allergic skin reaction.  
H351 - Suspected of causing cancer.

**Precautionary statements** : P201 - Obtain special instructions before use.  
P280 - Wear protective gloves. Wear eye or face protection. Wear protective clothing.  
P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P241 - Use explosion-proof electrical, ventilating, lighting and all material-handling equipment.  
P308 + P313 - IF exposed or concerned: Get medical attention.  
P305 + P310 - IF IN EYES: Immediately call a POISON CENTER or physician.  
P405 - Store locked up.  
P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

**Hazardous ingredients** : Paraformaldehyde  
formaldehyde

**Supplemental label elements** : Not applicable.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** : Not applicable.

### Special packaging requirements

Not applicable.

### 2.3 Other hazards

**Other hazards which do not result in classification** : Fine dust clouds may form explosive mixtures with air. Combustible. Handling and/or processing of this material may generate a dust which can cause mechanical irritation of the eyes, skin, nose and throat.

## SECTION 3: Composition/information on ingredients

**3.2 Mixtures** : Mixture

**SECTION 3: Composition/information on ingredients**

Product/ingredient name	Identifiers	%	Classification		Type
			67/548/EEC	Regulation (EC) No. 1272/2008 [CLP]	
Starch	EC: 232-679-6 CAS: 9005-25-8	≥25 - <50	Not classified.	Not classified.	[2]
Paraformaldehyde	REACH #: Exempted CAS: 30525-89-4	≥25 - <32	Carc. Cat. 3; R40  Xn; R20/22 Xi; R41, R38 R43	Flam. Sol. 2, H228  Acute Tox. 4, H302 Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 Carc. 2, H351	[1]
Cellulose	EC: 232-674-9 CAS: 9004-34-6	≥10 - <25	Not classified.	Not classified.	[2]
methanol	REACH #: 01-2119433307-44 EC: 200-659-6  CAS: 67-56-1 Index: 603-001-00-X	≥0.3 - <0.6	F; R11  T; R23/24/25, R39/23/24/25	Flam. Liq. 2, H225  Acute Tox. 3, H301  Acute Tox. 3, H311 Acute Tox. 3, H331 STOT SE 1, H370 (central nervous system (CNS) and optic nerve)	[1] [2]
formaldehyde	REACH #: 01-2119488953-20 EC: 200-001-8 CAS: 50-00-0 Index: 605-001-00-5	≥0.1 - <0.2	Carc. Cat. 3; R40  T; R23/24/25 C; R34 R43  <b>See Section 16 for the full text of the R- phrases declared above.</b>	Acute Tox. 3, H301  Acute Tox. 3, H311 Acute Tox. 3, H331 Skin Corr. 1B, H314 Eye Dam. 1, H318 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335  <b>See Section 16 for the full text of the H statements declared above.</b>	[1] [2]

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment, are PBTs or vPvBs or have been assigned a workplace exposure limit and hence require reporting in this section.

Type

- [1] Substance classified with a health or environmental hazard  
[2] Substance with a workplace exposure limit  
[3] Substance meets the criteria for PBT according to Regulation (EC) No. 1907/2006, Annex XIII  
[4] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII  
[5] Substance of equivalent concern

Occupational exposure limits, if available, are listed in Section 8.

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

- Eye contact** :  Get medical attention immediately. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** :  Get medical attention immediately. Move exposed person to fresh air. If breathing is difficult, give oxygen.
- Skin contact** :  Get medical attention immediately. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse. Get medical attention if irritation occurs.
- Ingestion** :  Get medical attention immediately. Wash out mouth with water. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician.
- General** : Move the victim to a safe area as soon as possible. If unconscious, place in recovery position and seek medical advice. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Allow the victim to rest in a well-ventilated area.
- Protection of first-aiders** :  No action shall be taken involving any personal risk or without suitable training. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.

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

#### Potential acute health effects

- Eye contact** :  Causes serious eye damage.
- Inhalation** :  May give off gas, vapour or dust that is very irritating or corrosive to the respiratory system. Vapour may be irritating to eyes and respiratory system.
- Skin contact** :  Causes skin irritation. May cause an allergic skin reaction. May cause allergic skin reactions with repeated exposure.
- Ingestion** :  May cause burns to mouth, throat and stomach.

#### Over-exposure signs/symptoms

- Eye contact** :  Adverse symptoms may include the following:  
pain  
watering  
redness
- Inhalation** :  Adverse symptoms may include the following:  
respiratory tract irritation  
coughing
- Skin contact** :  Adverse symptoms may include the following:  
pain or irritation  
redness  
blistering may occur
- Ingestion** :  Adverse symptoms may include the following:  
stomach pains

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

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** :  No specific treatment.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

- Suitable extinguishing media** : Use alcohol-resistant foam or water spray (mist).
- Unsuitable extinguishing media** : Do not use water jet.

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

- Hazards from the substance or mixture** : Flammable solid. Take precautionary measures against static discharges. Fine dust clouds may form explosive mixtures with air.
- Hazardous combustion products** : Decomposition products may include the following materials:  
carbon dioxide  
carbon monoxide

### 5.3 Advice for firefighters

- Special precautions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilt material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe dust. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

### 6.2 Environmental precautions

- Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

### 6.3 Methods and material for containment and cleaning up

- Small spill** : Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container.
- Large spill** : Approach the release from upwind. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Avoid creating dusty conditions and prevent wind dispersal. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container.

### 6.4 Reference to other sections

- : See Section 1 for emergency contact information.  
See Section 8 for information on appropriate personal protective equipment.  
See Section 13 for additional waste treatment information.

## SECTION 7: Handling and storage

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

### 7.1 Precautions for safe handling

- Protective measures** : See Section 8 for information on appropriate personal protective equipment. Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe dust. Do not ingest. Fine dust clouds may form explosive mixtures with air. Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Prevent dust accumulation. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Use spark-proof tools and explosion-proof equipment. Electrical equipment and lighting should be protected to appropriate standards to prevent dust coming into contact with hot surfaces, sparks or other ignition sources. Take precautionary measures against electrostatic discharges. To avoid fire or explosion, dissipate static electricity during transfer by earthing and bonding containers and equipment before transferring material.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

### 7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a segregated and approved area. Store away from incompatible materials (see Section 10). Store locked up. Eliminate all ignition sources. Keep away from food, drink and animal feeding stuffs. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabelled containers. Use appropriate containment to avoid environmental contamination. Keep container dry.

### 7.3 Specific end use(s)

- Recommendations** : Not available.
- Industrial sector specific solutions** : Not available.

## SECTION 8: Exposure controls/personal protection

The information in this section contains generic advice and guidance. Information is provided based on typical anticipated uses of the product.

### 8.1 Control parameters

#### Occupational exposure limits

Product/ingredient name	Exposure limit values
Starch	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> TWA: 10 mg/m <sup>3</sup> 8 hours. Form: inhalable dust TWA: 4 mg/m <sup>3</sup> 8 hours. Form: respirable dust
Cellulose	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> STEL: 20 mg/m <sup>3</sup> 15 minutes. Form: inhalable dust TWA: 10 mg/m <sup>3</sup> 8 hours. Form: inhalable dust TWA: 4 mg/m <sup>3</sup> 8 hours. Form: respirable dust
methanol	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011). Absorbed through skin.</b> STEL: 333 mg/m <sup>3</sup> 15 minutes. STEL: 250 ppm 15 minutes. TWA: 266 mg/m <sup>3</sup> 8 hours. TWA: 200 ppm 8 hours.

**SECTION 8: Exposure controls/personal protection**

formaldehyde	<b>EH40/2005 WELs (United Kingdom (UK), 12/2011).</b> STEL: 2.5 mg/m <sup>3</sup> 15 minutes. STEL: 2 ppm 15 minutes. TWA: 2 ppm 8 hours. TWA: 2.5 mg/m <sup>3</sup> 8 hours.
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**Recommended monitoring procedures** :  this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment. Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

**DNELs/DMELs**

Product/ingredient name	Type	Exposure	Value	Population	Effects
methanol	DNEL	Short term Dermal	40 mg/kg bw/day	Workers	Systemic
	DNEL	Short term Inhalation	260 mg/m <sup>3</sup>	Workers	Systemic
	DNEL	Short term Inhalation	260 mg/m <sup>3</sup>	Workers	Local
	DNEL	Long term Dermal	40 mg/kg bw/day	Workers	Systemic
	DNEL	Long term Inhalation	260 mg/m <sup>3</sup>	Workers	Systemic
	DNEL	Long term Inhalation	260 mg/m <sup>3</sup>	Workers	Local
	DNEL	Short term Dermal	8 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Inhalation	50 mg/m <sup>3</sup>	Consumers	Systemic
	DNEL	Short term Oral	8 mg/kg bw/day	Consumers	Systemic
	DNEL	Short term Inhalation	50 mg/m <sup>3</sup>	Consumers	Local
	DNEL	Long term Dermal	8 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	50 mg/m <sup>3</sup>	Consumers	Systemic
	DNEL	Long term Oral	8 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Inhalation	50 mg/m <sup>3</sup>	Consumers	Local
	formaldehyde	DNEL	Short term Inhalation	0.8 ppm	Workers
DNEL		Long term Dermal	240 mg/kg bw/day	Workers	Systemic
DNEL		Long term Inhalation	9 mg/m <sup>3</sup>	Workers	Systemic
DNEL		Long term Dermal	0.037 mg/cm <sup>2</sup>	Workers	Local
DNEL		Long term Inhalation	0.4 ppm	Workers	Local
DNEL		Long term Dermal	102 mg/kg bw/day	Consumers	Systemic
DNEL		Long term Inhalation	3.2 mg/cm <sup>2</sup>	Consumers	Systemic

**SECTION 8: Exposure controls/personal protection**

	DNEL	Long term Oral	4.1 mg/kg bw/day	Consumers	Systemic
	DNEL	Long term Dermal	0.012 mg/ cm <sup>2</sup>	Consumers	Local
	DNEL	Long term Inhalation	0.1 mg/m <sup>3</sup>	Consumers	Local

**PNECs**

Product/ingredient name	Type	Compartment Detail	Value	Method Detail
methanol	PNEC	Fresh water	154 mg/l	Assessment Factors
	PNEC	Marine	15.4 mg/l	Assessment Factors
	PNEC	Intermittent release	1540 mg/l	Assessment Factors
	PNEC	Sediment	570.4 mg/kg dwt	Equilibrium Partitioning
	PNEC	Soil	23.5 mg/kg ww	Equilibrium Partitioning
	PNEC	Sewage Treatment Plant	100 mg/l	Assessment Factors
formaldehyde	PNEC	Fresh water	0.47 mg/l	Assessment Factors
	PNEC	Marine	0.47 mg/l	Assessment Factors
	PNEC	Fresh water	4.7 mg/l	Assessment Factors
	PNEC	Fresh water sediment	2.44 mg/kg dwt	Equilibrium Partitioning
	PNEC	Marine water sediment	2.44 mg/kg dwt	Equilibrium Partitioning
	PNEC	Soil	0.21 mg/kg dwt	Equilibrium Partitioning
	PNEC	Sewage Treatment Plant	0.19 mg/l	Assessment Factors

**8.2 Exposure controls**

**Appropriate engineering controls** : Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapour or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

**Individual protection measures**

**Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Immediately remove any contaminated clothing, shoes or socks. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

**Eye/face protection** : Use eye protection according to EN 166, designed to protect against powders and dusts. Recommended: Tightly-fitting goggles

**Hand protection** : Wear suitable gloves tested to EN374. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers.

Recommended : Protective Index 6 / Breakthrough time >480 minutes: neoprene rubber 0.7 mm thickness or nitrile rubber 0.4 mm thickness

**Other skin protection** : For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves. Refer to European Standard EN 1149 for further information on material and design requirements and test methods. Wear work clothing with long sleeves. Handling of product where, due to high pressure, speed or force, large quantities of dust are generated and dispersed Wear dust-resistant protective clothing.

Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

**Respiratory protection** : Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Long Term Exposure / high concentrations : disposable particulate mask ; particulate filter (P3)

**SECTION 8: Exposure controls/personal protection**

Short term exposure / Low exposure : disposable particulate mask ; particulate filter (P2)

**Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation.

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

<b>Physical state</b>	: Solid. [Powder.]
<b>Colour</b>	: White to yellowish. [Light]
<b>Odour</b>	: Formaldehyde. [Slight]
<b>Odour threshold</b>	: Not available.
<b>pH</b>	: 6 [Conc. (% w/w): 10%]
<b>Melting point/freezing point</b>	: Not available.
<b>Initial boiling point and boiling range</b>	: Not available.
<b>Flash point</b>	: Closed cup: >75°C
<b>Evaporation rate</b>	: Not available.
<b>Flammability (solid, gas)</b>	: Not available.
<b>Burning time</b>	: Not available.
<b>Burning rate</b>	: Not available.
<b>Upper/lower flammability or explosive limits</b>	: Not available.
<b>Vapour pressure</b>	: Not available.
<b>Vapour density</b>	: Not available.
<b>Relative density</b>	: Not available.
<b>Bulk density</b>	: 360 kg/m <sup>3</sup>
<b>Solubility</b>	: Dispersible in water
<b>Partition coefficient: n-octanol/water</b>	: Not available.
<b>Auto-ignition temperature</b>	: Not available.
<b>Decomposition temperature</b>	: Not available.
<b>Viscosity</b>	: Not applicable.
<b>Explosive properties</b>	: Fine dust clouds may form explosive mixtures with air.
<b>Oxidising properties</b>	: Not available.

**9.2 Other information**

**VOC content (Without volume exclusion)** : 26.1 % (w/w)  
261.2 g/l

**SECTION 10: Stability and reactivity**

**10.1 Reactivity** : No specific test data related to reactivity available for this product or its ingredients.

**10.2 Chemical stability** : The product is stable.

**10.3 Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.

**SECTION 10: Stability and reactivity**

**10.4 Conditions to avoid** : Avoid the creation of dust when handling and avoid all possible sources of ignition (spark or flame). Take precautionary measures against electrostatic discharges. Prevent dust accumulation.

**10.5 Incompatible materials** : Reactive or incompatible with the following materials:  
oxidizing materials

**10.6 Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

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

Product/ingredient name	Result	Species	Dose	Exposure
Paraformaldehyde	LC50 Inhalation Vapour	Rat	1.07 mg/l	4 hours
methanol	LD50 Oral	Rat	800 mg/kg	-
	LC50 Inhalation Vapour	Rat - Male, Female	128.2 mg/l	4 hours
formaldehyde	LD50 Dermal	Rabbit	17100 mg/kg	-
	LC50 Inhalation Gas.	Rat - Male	490 ppm	4 hours
	LD50 Oral	Rat - Male	460 mg/kg	-

**Irritation/Corrosion**

Product/ingredient name	Result	Species	Score	Exposure	Observation
methanol	Skin - Oedema	Rabbit	0	-	72 hours
	Eyes - Cornea opacity	Rabbit	1	24 hours	-
	Eyes - Moderate irritant	Rabbit	-	24 hours	-
				100 milligrams	
	Eyes - Moderate irritant	Rabbit	-	40 milligrams	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 milligrams	-
formaldehyde	Skin - Irritant	Rat	-	-	7 days
	Eyes - Irritant	Rabbit	-	-	-
	Skin - Oedema	Rabbit	3	-	24 hours
	Eyes - Cornea opacity	Rat	4	-	7 days

**Conclusion/Summary**

**Skin** : **Paraformaldehyde**: Irritating to skin.  
**methanol**: Non-irritating to the skin.  
**Formaldehyde, solution**: Causes burns.

**Eyes** : **Paraformaldehyde**: Irritating to eyes.  
**methanol**: Non-irritating to the eyes.  
**Formaldehyde, solution**: Causes serious eye damage.

**Respiratory** : **methanol**: No specific data.  
**Formaldehyde, solution**: Irritating to respiratory system.

**Sensitisation**

Product/ingredient name	Route of exposure	Species	Result
methanol	Respiratory	Guinea pig	Not sensitizing
	skin	Guinea pig	Not sensitizing
formaldehyde	skin	Mouse	Sensitising
	skin	Guinea pig	Sensitising

**SECTION 11: Toxicological information****Conclusion/Summary**

**Skin** : **Paraformaldehyde**: Sensitising  
**methanol**: Not sensitizing  
**Formaldehyde, solution**: Sensitising

**Respiratory** : **methanol**: Not sensitizing  
**Formaldehyde, solution**: Not sensitizing

**Chronic toxicity**

Product/ingredient name	Result	Species	Dose	Exposure
methanol      formaldehyde	Chronic NOAEL Oral	Rat - Male, Female	466 to 529 mg/ kg Repeated dose	104 weeks
	Chronic NOEC Inhalation Vapour	Rat - Male, Female	0.13 mg/l	12 months
	Chronic NOAEC Inhalation Vapour	Rat - Male, Female	1.3 mg/l Continuous	108 days
	Chronic NOAEC Inhalation Vapour	Rat	1.33 mg/l Continuous	17 days; 22.7 hours per day
	Chronic LOAEL Oral	Rat - Male, Female	82 mg/kg	105 weeks
	Chronic NOAEC Inhalation Gas.	Rat - Male, Female	1 ppm	26 weeks
	Sub-acute NOAEC Inhalation Gas. Sub-acute LOAEC Inhalation Gas.	Rat - Male  Rat - Male	2 ppm  6 ppm	6 weeks  6 weeks

**Mutagenicity**

Product/ingredient name	Test	Experiment	Result
methanol      formaldehyde	DNA damage and repair assay	Experiment: In vitro	Positive
	OECD 471	Subject: Bacteria Experiment: In vitro	Negative
	OECD 476	Subject: Bacteria Experiment: In vitro	Negative
	OECD 474	Subject: Mammalian-Animal Experiment: In vivo	Negative
	OECD 471	Subject: Mammalian-Animal Experiment: In vitro	Positive
	OECD 741	Subject: Bacteria Experiment: In vitro	Positive
	OECD 484	Subject: Mammalian-Animal Experiment: In vivo Subject: Mammalian-Animal	Negative

**Carcinogenicity**

**Conclusion/Summary** : **Paraformaldehyde**: Suspected of causing cancer.  
**methanol**: Methanol was investigated for chronic toxicity and carcinogenicity in two long-term body inhalation studies. There was no evidence of a carcinogenic potential in rats and mice exposed to air concentrations up to 1.3 mg/L.

In studies with oral administration in rats and mice the number of tumor-bearing animals in the rat study showed a clear dose-related trend. The effective dose levels were far above human occupational exposure levels and are already associated with other forms of toxicity in humans.

**Formaldehyde, solution**: Formaldehyde has local carcinogenic activity in experimental animals; there is evidence for a threshold effect for tumors involving cytotoxicity and regenerative cell proliferation as the mode of action. There is no evidence for systemic or local carcinogenic effects after oral exposure in rats. In dermal initiation/promotion studies formaldehyde did not initiate or promote

**SECTION 11: Toxicological information**

skin tumorigenesis in mice. There is a clear evidence from chronic inhalation studies in rats that formaldehyde causes tumors in the nasal cavity.

**Reproductive toxicity**

**Conclusion/Summary** :  **methanol**: Conclusive, but not sufficient for classification.  
 **Formaldehyde, solution**: It is not expected that formaldehyde reaches the reproductive organs and there is no evidence for effects on fertility and gonads in experimental animals after long-term oral or inhalation exposure. Toxicokinetic data suggest only local effects at the site of entry.

**Teratogenicity**

**Conclusion/Summary** :  **methanol**: Conclusive, but not sufficient for classification.  
 **Formaldehyde, solution**: There is no evidence for adverse effects of formaldehyde on embryo and fetal development as dose levels inducing local maternal effects and secondary decrease in body weights and growth.

**Specific target organ toxicity (single exposure)**

Product/ingredient name	Category	Route of exposure	Target organs
<input checked="" type="checkbox"/> methanol	Category 1	All	central nervous system (CNS) and optic nerve
formaldehyde	Category 3	Not applicable.	Respiratory tract irritation

**Specific target organ toxicity (repeated exposure)**

Not available.

**Aspiration hazard**

Not available.

**Information on the likely routes of exposure** : Not available.

**11.2 Mixture / Product-specific information****Numerical measures of toxicity****Acute toxicity estimates**

Route	ATE value
<input checked="" type="checkbox"/> Oral	2566.9 mg/kg
Dermal	41653.6 mg/kg
Inhalation (gases)	356370.1 ppm
Inhalation (vapours)	40.26 mg/l

**Potential acute health effects**

**Inhalation** :  May give off gas, vapour or dust that is very irritating or corrosive to the respiratory system. Vapour may be irritating to eyes and respiratory system.

**Ingestion** :  May cause burns to mouth, throat and stomach.

**Skin contact** :  Causes skin irritation. May cause an allergic skin reaction. May cause allergic skin reactions with repeated exposure.

**Eye contact** :  Causes serious eye damage.

**Potential chronic health effects**

**General** :  Repeated or prolonged inhalation of dust may lead to chronic respiratory irritation. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**SECTION 11: Toxicological information**

**Carcinogenicity** : Suspected of causing cancer. Risk of cancer depends on duration and level of exposure. Formaldehyde is classified as a category 1B carcinogen by EU (Suspected of causing cancer in humans). The classification is mainly based on carcinogenic effects demonstrated in animal experiments, but also on experience from occupational use indicating, but not proving, increased risk of cancer in humans. The actual risk is a rare type of cancer in the nasopharyngeal area (upper part of the throat, behind the nose).

Animal experiments have demonstrated that the cancer risk has a strong link to high and repeated doses of formaldehyde, with an effect threshold at 2 ppm. This is the basis for the derived no effect level (DNEL) for occupational use of 0,4 ppm. Exposure below this level gives limited or no risk for adverse effects.

**Delayed and immediate effects and also chronic effects from short and long term exposure**

**Short term exposure** No known significant effects or critical hazards.

**Long term exposure** No known significant effects or critical hazards.

**Symptoms related to the physical, chemical and toxicological characteristics**

**Inhalation** : Adverse symptoms may include the following:  
respiratory tract irritation  
coughing

**Ingestion** : Adverse symptoms may include the following:  
stomach pains

**Skin contact** : Adverse symptoms may include the following:  
pain or irritation  
redness  
blistering may occur

**Eye contact** : Adverse symptoms may include the following:  
pain  
watering  
redness

**Other information** : Not available.

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

Product/ingredient name	Result	Species	Exposure
Paraformaldehyde methanol	LC50 60 mg/l	Fish	96 hours
	EC50 22000 mg/l Fresh water	Algae - Selenastrum capricornutum	96 hours Static
	IC50 8800 mg/l Fresh water	Micro-organism - Nitrosomonas sp.	24 hours Static
	Acute EC50 >10000 mg/l Fresh water	Daphnia - Daphnia magna	48 hours Static
	Acute LC50 15400 mg/l Fresh water	Fish - Lepomis macrochirus	96 hours Flow through
formaldehyde	Chronic NOEC 7900 mg/l Fresh water	Fish - Oryzias latipes	200 hours Static
	EC50 4.89 mg/l Fresh water	Algae - Scenedesmus subspicatus	72 hours
	Acute EC50 5.8 mg/l Fresh water Acute LC50 6.7 mg/l Fresh water	Daphnia - Daphnia pulex Fish - Morone saxatilis	48 hours 96 hours

**Conclusion/Summary** : **Methanol**: No known significant effects or critical hazards.  
**Formaldehyde, solution**: Toxic to aquatic organisms.

**SECTION 12: Ecological information****12.2 Persistence and degradability**

Product/ingredient name	Test	Result	Dose	Inoculum
methanol  formaldehyde	-	83 to 91 % - Readily - 3 days	-	Fresh water
	-	71 to 83 % - Readily - 5 days	BOD/ThOD	Sediment
	-	69 to 97 % - 5 days	O <sub>2</sub> Consumption	Sewage
	-	53.4 % - 5 days	-	Marine water
	-	46.3 % - 5 days	-	-
	Anaerobic biodegradation OECD 303 A	100 % - 4 days	Degradation	Anaerobic sludge
		99.5 % - 160 days	Degradation	Activated sludge
OECD 301 C	97 % - Readily - 14 days	TOC removal	Industrial	
OECD 301 D	90 % - Readily - 28 days	30 mg/l O <sub>2</sub> Consumption	Adapted	

**Conclusion/Summary** : **methanol**: Readily biodegradable  
**Formaldehyde, solution**: Readily biodegradable

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
methanol	-	50%; 17.2 day(s)	Readily
formaldehyde	-	-	Readily

**12.3 Bioaccumulative potential**

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
methanol	-0.77	<10	low
formaldehyde	0.35	0.396	low

**12.4 Mobility in soil**

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**Mobility** : Not available.

**12.5 Results of PBT and vPvB assessment**

**PBT** : Not applicable.

**vPvB** : Not applicable.

**12.6 Other adverse effects** : No known significant effects or critical hazards.

**SECTION 13: Disposal considerations**

The information in this section contains generic advice and guidance. The list of Identified Uses in Section 1 should be consulted for any available use-specific information provided in the Exposure Scenario(s).

**13.1 Waste treatment methods****Product**

**Methods of disposal** : The generation of waste should be avoided or minimised wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction.

**Hazardous waste** : Yes.

**SECTION 13: Disposal considerations****European waste catalogue (EWC)**

Waste code	Waste designation
08 04 99	wastes not otherwise specified

**Packaging**

**Methods of disposal** :  The generation of waste should be avoided or minimised wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

**Special precautions** : This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

**SECTION 14: Transport information**

	ADR/RID	ADN	IMDG	IATA
<b>14.1 UN number</b>	UN1325	UN1325	UN1325	UN1325
<b>14.2 UN proper shipping name</b>	FLAMMABLE SOLID, ORGANIC, N.O.S. (Paraformaldehyde)	FLAMMABLE SOLID, ORGANIC, N.O.S. (Paraformaldehyde)	<input checked="" type="checkbox"/> FLAMMABLE SOLID, ORGANIC, N.O.S. (Paraformaldehyde)	Flammable solid, organic, n.o.s. (Paraformaldehyde)
<b>14.3 Transport hazard class(es)</b>	4.1 	4.1 	4.1 	4.1 
<b>14.4 Packing group</b>	III	III	III	III
<b>14.5 Environmental hazards</b>	No.	<input checked="" type="checkbox"/> Yes.	No.	No.
<b>Additional information</b>	<input checked="" type="checkbox"/> <b>Hazard identification number</b> 40  <input checked="" type="checkbox"/> <b>Limited quantity</b> 5 kg  <input checked="" type="checkbox"/> <b>Special provisions</b> 274  <input checked="" type="checkbox"/> <b>Tunnel code</b> (E)	<input checked="" type="checkbox"/> The product is only regulated as an environmentally hazardous substance when transported in tank vessels.  <input checked="" type="checkbox"/> <b>Special provisions</b> 274	<input checked="" type="checkbox"/> <b>Emergency schedules (EmS)</b> F-A, S-G  <input checked="" type="checkbox"/> <b>Special provisions</b> 223, 274, 915	<input checked="" type="checkbox"/> <b>Passenger and Cargo Aircraft</b> Quantity limitation: 25 kg Packaging instructions: 446 <b>Cargo Aircraft Only</b> Quantity limitation: 100 kg Packaging instructions: 449 <b>Limited Quantities - Passenger Aircraft</b> Quantity limitation: 10 kg Packaging instructions: Y443  <input checked="" type="checkbox"/> <b>Special provisions</b> A3, A803

**14.6 Special precautions for user** :  **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**SECTION 14: Transport information**

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code : Not available.

**SECTION 15: Regulatory information**

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

**EU Regulation (EC) No. 1907/2006 (REACH)****Annex XIV - List of substances subject to authorisation****Annex XIV**

None of the components are listed.

**Substances of very high concern**

None of the components are listed.

**Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles** : Not applicable.

**Other EU regulations**

**Europe inventory** : Not determined.

**Black List Chemicals** : Not listed

**Priority List Chemicals** : Not listed

**Integrated pollution prevention and control list (IPPC) - Air** : Not listed

**Integrated pollution prevention and control list (IPPC) - Water** : Not listed

**Integrated pollution prevention and control list (IPPC) - Water** : Not listed

Product/ingredient name	Carcinogenic effects	Mutagenic effects	Developmental effects	Fertility effects
Paraformaldehyde	Carc. 2, H351	-	-	-
formaldehyde	Carc. 2, H351	-	-	-

**Seveso II Directive**

This product is not controlled under the Seveso II Directive.

**National regulations****Chemical Weapon Convention List Schedules I, II & III Chemicals**

Not listed.

**Montreal Protocol (Annexes A, B, C, E)**

Not listed.

**Stockholm Convention on Persistent Organic Pollutants**

Not listed.

**Rotterdam Convention on Prior Inform Consent (PIC)**

Not listed.

**UNECE Aarhus Protocol on POPs and Heavy Metals**

Not listed.

**SECTION 15: Regulatory information**

**15.2 Chemical Safety Assessment** : This product contains substances for which Chemical Safety Assessments are still required.

**SECTION 16: Other information**

▣ Indicates information that has changed from previously issued version.

**Abbreviations and acronyms** : ATE = Acute Toxicity Estimate  
 CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]  
 DNEL = Derived No Effect Level  
 EUH statement = CLP-specific Hazard statement  
 PNEC = Predicted No Effect Concentration  
 RRN = REACH Registration Number

**Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]**

Classification	Justification
Flam. Sol. 2, H228 Skin Irrit. 2, H315 Eye Dam. 1, H318 Skin Sens. 1, H317 Carc. 2, H351	Expert judgment Calculation method Calculation method Calculation method Calculation method
<b>Full text of abbreviated H statements</b> :	
▣ H225 H228 H301 H301 (oral) H302 (oral) H311 H311 (dermal) H314 H315 H317 H318 H331 H331 (inhalation) H332 (inhalation) H335 H351 H370 (central nervous system (CNS) and optic nerve)	Highly flammable liquid and vapour. Flammable solid. Toxic if swallowed. Toxic if swallowed. Harmful if swallowed. Toxic in contact with skin. Toxic in contact with skin. Causes severe skin burns and eye damage. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye damage. Toxic if inhaled. Toxic if inhaled. Harmful if inhaled. May cause respiratory irritation. Suspected of causing cancer. Causes damage to organs. (central nervous system (CNS) and optic nerve)
<b>Full text of classifications [CLP/GHS]</b> :	
▣ Acute Tox. 3, H301 Acute Tox. 3, H311 Acute Tox. 3, H331 Acute Tox. 4, H302 Acute Tox. 4, H332 Carc. 2, H351 Eye Dam. 1, H318  Flam. Liq. 2, H225 Flam. Sol. 2, H228 Skin Corr. 1B, H314 Skin Irrit. 2, H315 Skin Sens. 1, H317 STOT SE 1, H370 (central nervous system (CNS) and optic nerve) STOT SE 3, H335	ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (dermal) - Category 3 ACUTE TOXICITY (inhalation) - Category 3 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (inhalation) - Category 4 CARCINOGENICITY - Category 2 SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1  FLAMMABLE LIQUIDS - Category 2 FLAMMABLE SOLIDS - Category 2 SKIN CORROSION/IRRITATION - Category 1B SKIN CORROSION/IRRITATION - Category 2 SKIN SENSITIZATION - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (central nervous system (CNS) and optic nerve) - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3

**SECTION 16: Other information**

<b>Full text of abbreviated R phrases</b>	: R11- Highly flammable. R40- Limited evidence of a carcinogenic effect. R23/24/25- Toxic by inhalation, in contact with skin and if swallowed. R39/23/24/25- Toxic: danger of very serious irreversible effects through inhalation, in contact with skin and if swallowed. R20/22- Harmful by inhalation and if swallowed. R34- Causes burns. R41- Risk of serious damage to eyes. R38- Irritating to skin. R43- May cause sensitisation by skin contact.
<b>Full text of classifications [DSD/DPD]</b>	: F - Highly flammable Carc. Cat. 3 - Carcinogen category 3 T - Toxic C - Corrosive Xn - Harmful Xi - Irritant
<b>Date of issue/ Date of revision</b>	: 22.05.2015.
<b>Date of previous issue</b>	: 18.07.2012.
<b>Previous product name</b>	: Not available.
<b>Version</b>	: 4