

## Safety data sheet

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

#### 1.1. Product identifier.

Code: C302025, C302041, C302042, C302051  
Product name: HYDROGUM

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

Intended use: For professional use only. Alginate for dental impression.

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

Name: Zhermack S.p.a  
Full address: Via Bovazecchino 100  
District and Country: 45021 Badia Polesine (RO)  
Italy  
Tel. +39 0425-597611  
Fax. +39 0425-597689

e-mail address of the competent person.

responsible for the Safety Data Sheet. [msds@zhermack.com](mailto:msds@zhermack.com)

#### 1.4. Emergency telephone number.

For urgent inquiries refer to. 0039 0425597611

### SECTION 2. Hazards identification.

#### 2.1. Classification of the substance or mixture.

The product is classified as hazardous pursuant to the provisions set forth in EC Regulation 1272/2008 (CLP) (and subsequent amendments and supplements). The product thus requires a safety datasheet that complies with the provisions of EC Regulation 1907/2006 and subsequent amendments. Any additional information concerning the risks for health and/or the environment are given in sections 11 and 12 of this sheet.

Hazard classification and indication:

Specific target organ toxicity - repeated exposure, category 2	H373	May cause damage to organs through prolonged or repeated exposure.
Hazardous to the aquatic environment, chronic toxicity, category 3	H412	Harmful to aquatic life with long lasting effects.

#### 2.2. Label elements.

The Regulation EC 1272/2008, on classification, labelling and packaging of substances and mixtures (CLP), shall not apply to a medical device in the finished state used in direct physical contact with the human body according to art. 1.5, letter d). Therefore the product is exempted from the CLP labeling requirements.

Hazard labelling pursuant to EC Regulation 1272/2008 (CLP) and subsequent amendments and supplements.

Hazard pictograms:

**C302025, C302041, C302042, C302051  
HYDROGUM**

Signal words: Warning

## Hazard statements:

**H373** May cause damage to lungs through prolonged or repeated exposure. Route of exposure: inhalation.  
**H412** Harmful to aquatic life with long lasting effects.

## Precautionary statements:

**P260** Do not breathe dust / fume / gas / mist / vapours / spray.  
**P273** Avoid release to the environment.  
**P305+P351+P338** IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
**P314** Get medical advice / attention if you feel unwell.

Contains: CRISTOBALITE

**2.3. Other hazards.**

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

Classification of the mixture is based on the results of an in vitro assay conducted in accordance with the guidelines provided by OCSE (OECD Test Guideline 437 resp. EU Method B.47 – Bovine Corneal Opacity and Permeability (BCOP) Test Method) and GLP certified - Good Laboratory Practices. For more information refer to section 11.

**SECTION 3. Composition/information on ingredients.****3.1. Substances.**

Information not relevant.

**3.2. Mixtures.**

Contains:

**Identification.****Classification 1272/2008 (CLP).****CRISTOBALITE**

CAS. 14464-46-1

1 ≤ x &lt; 8

STOT RE 1 H372

EC. 238-455-4

INDEX. -

**DIPOTASSIUM HEXAFLUOTOTITANATE**

CAS. 16919-27-0

3 ≤ x &lt; 5

Acute Tox. 4 H302, Eye Dam. 1 H318

EC. 240-969-9

INDEX. -

Reg. no. 01-2119978268-20-XXXX

**ZINC OXIDE**



**5.3. Advice for firefighters.**

## GENERAL INFORMATION

Use jets of water to cool the containers to prevent product decomposition and the development of substances potentially hazardous for health. Always wear full fire prevention gear. Collect extinguishing water to prevent it from draining into the sewer system. Dispose of contaminated water used for extinction and the remains of the fire according to applicable regulations.

## SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

Normal fire fighting clothing i.e. fire kit (BS EN 469), gloves (BS EN 659) and boots (HO specification A29 and A30) in combination with self-contained open circuit positive pressure compressed air breathing apparatus (BS EN 137).

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

If there are no contraindications, spray powder with water to prevent the formation of dust.

Wear suitable protective equipment (including personal protective equipment referred to under Section 8 of the safety data sheet) to prevent any contamination of skin, eyes and personal clothing. These indications apply for both processing staff and those involved in emergency procedures.

**6.2. Environmental precautions.**

The product must not penetrate into the sewer system or come into contact with surface water or ground water.

**6.3. Methods and material for containment and cleaning up.**

Collect the leaked product and place it in containers for recovery or disposal. If the product is flammable, use explosion-proof equipment. If there are no contraindications, use jets of water to eliminate product residues.

Make sure the leakage site is well aired. Evaluate the compatibility of the container to be used, by checking section 10. Contaminated material should be disposed of in compliance with the provisions set forth in point 13.

**6.4. Reference to other sections.**

Any information on personal protection and disposal is given in sections 8 and 13.

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

Before handling the product, consult all the other sections of this material safety data sheet. Avoid leakage of the product into the environment. Do not eat, drink or smoke during use. Remove any contaminated clothes and personal protective equipment before entering places in which people eat.

**7.2. Conditions for safe storage, including any incompatibilities.**

Store only in the original container. Store the containers sealed, in a well ventilated place and dry place, away from direct sunlight (storage temperature: 5-27° C). Keep containers away from any incompatible materials, see section 10 for details.

**7.3. Specific end use(s).**

See section 1.2.

**SECTION 8. Exposure controls/personal protection.****8.1. Control parameters.**

Regulatory References:

AUS	Österreich	Grenzwerteverordnung 2011 - GKV 2011
BEL	Belgique	AR du 11/3/2002. La liste est mise à jour pour 2010
CZE	Česká Republika	Nářizení vlády č. 361/2007 Sb. kterým se stanoví podmínky ochrany zdraví při práci
DEU	Deutschland	MAK-und BAT-Werte-Liste 2012
DNK	Danmark	Graensevaerdier per stoffer og materialer
ESP	España	INSHT - Límites de exposición profesional para agentes químicos en España 2015
EST	Eesti	Töökeskkonna keemiliste ohutegurite piinormid 1. Vastu võetud 18.09.2001 nr 293 RT I 2001, 77, 460 - Redaktsiooni jõustumise kp: 01.01.2008
FIN	Suomi	HTP-arvot 2012. Haitallisiksi tunnetut pitoisuudet - Sosiaali- ja terveystieteiden tutkimuskeskuksen julkaisu 2012:5
FRA	France	JORF n°0109 du 10 mai 2012 page 8773 texte n° 102
GRC	Ελλάδα	ΕΦΗΜΕΡΙΣ ΤΗΣ ΚΥΒΕΡΝΗΣΕΩΣ - ΤΕΥΧΟΣ ΠΡΩΤΟ Αρ. Φύλλου 19 - 9 Φεβρουαρίου 2012
HUN	Magyarország	50/2011. (XII. 22.) NGM rendelet a munkahelyek kémiai biztonságáról
IRL	Éire	Code of Practice Chemical Agent Regulations 2011
ITA	Italia	Decreto Legislativo 9 Aprile 2008, n.81
NLD	Nederland	Databank of the social and Economic Concil of Netherlands (SER) Values, AF 2011:18
NOR	Norge	Veiledning om Administrative normer for forurensning i arbeidsatmosfære
POL	Polska	ROZPORZĄDZENIE MINISTRA PRACY I POLITYKI SPOŁECZNEJ z dnia 16 grudnia 2011r
SVK	Slovensko	NARIADENIE VLÁDY Slovenskej republiky z 20. júna 2007
SVN	Slovenija	Uradni list Republike Slovenije 15. 6. 2007
SWE	Sverige	Occupational Exposure Limit Values, AF 2011:18
	TLV-ACGIH	ACGIH 2016

**CRISTOBALITE**

Threshold Limit Value.

Type	Country	TWA/8h		STEL/15min		
		mg/m3	ppm	mg/m3	ppm	
VLEP	BEL	0,05				RESP.
TLV	DNK	0,15				RESP.
VLEP	FRA	0,05				RESP.
AK	HUN	0,15				RESP.

**C302025, C302041, C302042, C302051  
HYDROGUM**

OEL	IRL	0,1	RESP.
VLEP	ITA	0,05	(USA-NIOSH)
MAC	NLD	0,075	RESP.
MAK	SWE	0,05	RESP.
TLV-ACGIH		0,025	

**DIPOTASSIUM HEXAFLUOTITANATE**

Predicted no-effect concentration - PNEC.

Normal value in fresh water	0,131	mg/l
Normal value in marine water	0,131	mg/l
Normal value for fresh water sediment	24,45	mg/kg/d
Normal value for marine water sediment	4,89	mg/kg/d
Normal value of STP microorganisms	1,51	mg/l
Normal value for the terrestrial compartment	19,1	mg/kg

## Health - Derived no-effect level - DNEL / DMEL

Route of exposure	Effects on consumers.				Effects on workers			
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Inhalation.					VND	5,2 mg/m3	5,2 mg/m3	5,2 mg/m3
Skin.					VND	75 mg/kg bw/d	VND	75 mg/kg bw/d

**ZINC OXIDE**

Threshold Limit Value.

Type	Country	TWA/8h		STEL/15min	
		mg/m3	ppm	mg/m3	ppm
MAK	AUS	5			
VLEP	BEL	10			
TLV	CZE	1		2	
MAK	DEU	1		1	
TLV	DNK	4			
VLA	ESP	2		10	
TLV	EST	5			
HTP	FIN	2		10	
VLEP	FRA	5			
TLV	GRC	5		10	
AK	HUN	5		20	
OEL	IRL	2			RESP.
MAC	NLD	5			
TLV	NOR	5			
NDS	POL	5		10	
NPHV	SVK	1			
MV	SVN		4		
MAK	SWE	5			
TLV-ACGIH		2		10	

**VASELIN OIL**

Threshold Limit Value.

Type	Country	TWA/8h		STEL/15min	
		mg/m3	ppm	mg/m3	ppm

**C302025, C302041, C302042, C302051  
HYDROGUM**

TLV-ACGIH

5

INHAL.

**Health - Derived no-effect level - DNEL / DMEL**

Route of exposure	Effects on consumers.			Effects on workers				
	Acute local	Acute systemic	Chronic local	Chronic systemic	Acute local	Acute systemic	Chronic local	Chronic systemic
Oral.			VND	40 mg/kg/d				
Inhalation.			VND	35 mg/m3			VND	160 mg/m3
Skin.			VND	92 mg/kg/d			VND	220 mg/kg/d

Legend:

(C) = CEILING ; INHAL = Inhalable Fraction ; RESP = Respirable Fraction ; THORA = Thoracic Fraction.

VND = hazard identified but no DNEL/PNEC available ; NEA = no exposure expected ; NPI = no hazard identified.

**8.2. Exposure controls.**

As the use of adequate technical equipment must always take priority over personal protective equipment, make sure that the workplace is well aired through effective local aspiration. Personal protective equipment must be CE marked, showing that it complies with applicable standards.

Provide an emergency shower with face and eye wash station.

Exposure levels must be kept as low as possible to avoid significant build-up in the organism. Manage personal protective equipment so as to guarantee maximum protection (e.g. reduction in replacement times).

**HAND PROTECTION**

In the case of prolonged contact with the product, protect the hands with penetration-resistant work gloves (see standard EN 374).

Work glove material must be chosen according to the use process and the products that may form. Latex gloves may cause sensitivity reactions.

**SKIN PROTECTION**

Wear category II professional long-sleeved overalls and safety footwear (see Directive 89/686/EEC and standard EN ISO 20344). Wash body with soap and water after removing protective clothing.

**EYE PROTECTION**

Wear a hood visor or protective visor combined with airtight goggles (see standard EN 166).

**RESPIRATORY PROTECTION**

Use a type P filtering facemask (see standard EN 149) or equivalent device, whose class (1, 2 or 3) and effective need, must be defined according to the outcome of risk assessment.

**ENVIRONMENTAL EXPOSURE CONTROLS.**

The emissions generated by manufacturing processes, including those generated by ventilation equipment, should be checked to ensure compliance with environmental standards.

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

Appearance	powder
Colour	light green
Odour	mint
Odour threshold.	Not available.
pH.	Not applicable.

**C302025, C302041, C302042, C302051  
HYDROGUM**

Melting point / freezing point.	Not available (Melting point). Not applicable (freezing point).
Initial boiling point.	Not applicable.
Boiling range.	Not applicable.
Flash point.	Not available.
Evaporation Rate	Not available.
Flammability of solids and gases	Not available.
Lower inflammability limit.	Not available.
Upper inflammability limit.	Not available.
Lower explosive limit.	Not available.
Upper explosive limit.	Not available.
Vapour pressure.	Not available.
Vapour density	Not available.
Relative density.	0,2-0,5 g/cm3
Solubility	partially soluble in water
Partition coefficient: n-octanol/water	Not available.
Auto-ignition temperature.	Not available.
Decomposition temperature.	Not available.
Viscosity	Not applicable.
Explosive properties	Not available.
Oxidising properties	Not available.

**9.2. Other information.**

Information not available.

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

There are no particular risks of reaction with other substances in normal conditions of use.

**10.2. Chemical stability.**

The product is stable in normal conditions of use and storage.

**10.3. Possibility of hazardous reactions.**

The powders are potentially explosive when mixed with air.

**10.4. Conditions to avoid.**

Avoid environmental dust build-up. Avoid moisture and high temperatures.

**10.5. Incompatible materials.**



**C302025, C302041, C302042, C302051  
HYDROGUM**

Not known.

**10.6. Hazardous decomposition products.**

Not known.

**SECTION 11. Toxicological information.****11.1. Information on toxicological effects.****ACUTE TOXICITY.**

LC50 (Inhalation - vapours) of the mixture: Not classified (no significant component).

LC50 (Inhalation - mists / powders) of the mixture: Not classified (no significant component).

LD50 (Oral) of the mixture: 10800,000 mg/kg

LD50 (Dermal) of the mixture: Not classified (no significant component).

**SKIN CORROSION / IRRITATION.**

Does not meet the classification criteria for this hazard class.

**SERIOUS EYE DAMAGE / IRRITATION.**

Does not meet the classification criteria for this hazard class (INTERNAL TEST (Bridging Principle) - Negative (OECD 437 resp. EU Method B.47, GLP, in vitro, study report 2014).

**RESPIRATORY OR SKIN SENSITISATION.**

Does not meet the classification criteria for this hazard class.

**GERM CELL MUTAGENICITY.**

Does not meet the classification criteria for this hazard class.

**CARCINOGENICITY.**

Does not meet the classification criteria for this hazard class.

**REPRODUCTIVE TOXICITY.**

Does not meet the classification criteria for this hazard class.

**STOT - SINGLE EXPOSURE.**

Does not meet the classification criteria for this hazard class.

**STOT - REPEATED EXPOSURE.**

May cause damage to organs.

**ASPIRATION HAZARD.**

Does not meet the classification criteria for this hazard class.

**ZINC OXIDE**

LD50 (Oral).> 5000 mg/kg (OECD 401, rat, ECHA dossier).

LD50 (Dermal).> 2000 mg/kg (OECD 402, GLP, rat, ECHA dossier).

LC50 (Inhalation).> 5,7 mg/l (OECD 403, rat, ECHA dossier).

**Irritation/Corrosion**

Skin irritation: Not irritating (publication, in vivo, guinea pig, ECHA dossier).

Eye irritation: Not irritating (OECD 405, GLP, in vivo, rabbit, ECHA dossier).

Skin Sensitization: Insufficient data (OECD 406, GLP, Guinea pig maximisation test, ECHA dossier).

STOT – Repeated/single exposure: Negative (subchronic, inhalation exposure, rat, ECHA dossier).

Genotoxicity: Negative (in vivo, in vitro, ECHA dossier).

Carcinogenicity: No data available.

Toxicity to reproduction: No data available.

**CRISTOBALITE**

LD50 (Oral).> 2000 mg/kg (OECD 401, rat, MSDS supplier)

LC50 (Inhalation).> 2,6 mg/l (OECD 403, rat, MSDS supplier)

**Irritation/Corrosion**

Skin irritation: Not irritating (MSDS supplier).

Eye irritation: Not irritating (MSDS supplier).

**C302025, C302041, C302042, C302051  
HYDROGUM**

Sensitization: Not sensitizing (MSDS supplier).

Mutagenicity: No data available.

Carcinogenicity: No data available.

Toxicity to reproduction: No data available.

STOT Repeated Exposure:

In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However it pointed out that not all industrial circumstances, nor all crystalline silica types, were to be incriminated (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France).

In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. “

There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore preventing the onset of silicosis will also reduce the cancer risk...” (SCOEL SUM Doc 94-final, June 2003).

There is a body of evidence supporting the fact that increased cancer risk would not be limited to people already suffering from silicosis. According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.

**DIPOTASSIUM HEXAFLUOTOTITANATE**

Acute Toxicity

Inhalation: No data available.

Dermal: No data available.

Irritation/Corrosion

Skin irritation: Not irritating (OECD 404, in vivo, rabbit, MSDS supplier).

Eye irritation: Corrosive (OECD 405, in vivo, rabbit, MSDS supplier).

Skin sensitization: Not sensitising (OECD 406, GLP, Guinea pig maximisation test, MSDS supplier).

STOT Repeated/single exposure: No data available.

Genotoxicity in vitro: Negative (OECD 471, Test di Ames); Positive (OECD 487,476; chromosomal aberration) (MSDS supplier).

Genotoxicity in vivo: Positive (OECD 474, rat, SDS supplier).

Carcinogenicity: No data available.

Toxicity to reproduction: No data available.

**VASELIN OIL**

LD50 (Oral).> 5000 mg/kg (similar or equivalent to OECD 401, rat, dossier ECHA)

LD50 (Dermal).> 2000 mg/kgbw (similar or equivalent to OECD 402, rabbit, dossier ECHA)

LC50 (Inhalation).> 5 mg/L (OECD 403, rat, 4h, dossier ECHA)

Irritation/Corrosion

Skin irritation: No data available.

Eye irritation: No data available.

Skin Sensitization: No data available.

STOT – Repeated/single exposure: No data available.

CMR effects: No data available.

Aspiration toxicity: toxic for aspiration (MSDS supplier).

**SECTION 12. Ecological information.**

This product is dangerous for the environment and the aquatic organisms. In the long term, it has negative effects on the aquatic environment.

**12.1. Toxicity.****ZINC OXIDE**

EC50 - for Crustacea. 0,83 mg/l/48h (pH< 7; Ceriodaphnia dubia, SDS supplier).

EC50 - for Algae / Aquatic Plants. 0,27 mg/l/72h (pH> 7; Pseudokirchnerella subcapitata, SDS supplier).

**DIPOTASSIUM  
HEXAFLUOTOTITANATE**

LC50 - for Fish. 172,4 mg/l/96h (OECD 203, Brachydanio rerio, SDS supplier).

EC50 - for Crustacea. 48,2 mg/l/48h (OECD 203, Daphnia magna, SDS supplier).

EC50 - for Algae / Aquatic Plants. 0,646 mg/l/72h (OECD 202, Pseudokirchnerella subcapitata, SDS supplier).

**12.2. Persistence and degradability.**

ZINC OXIDE

Biodegradability: Information not available.

NOT rapidly biodegradable.

CRISTOBALITE

NOT rapidly biodegradable.

DIPOTASSIUM

HEXAFLUOTOTITANATE

NOT rapidly biodegradable.

**12.3. Bioaccumulative potential.**

Information not available.

**12.4. Mobility in soil.**

Information not available.

**12.5. Results of PBT and vPvB assessment.**

On the basis of available data, the product does not contain any PBT or vPvB in percentage greater than 0,1%.

**12.6. Other adverse effects.**

Information not available.

**SECTION 13. Disposal considerations.**

**13.1. Waste treatment methods.**

Reuse, when possible. Product residues should be considered special hazardous waste (HP 5). The hazard level of waste containing this product should be evaluated according to applicable regulations.

Disposal must be performed through an authorised waste management firm, in compliance with national and local regulations.

CONTAMINATED PACKAGING

Contaminated packaging must be recovered or disposed of in compliance with national waste management regulations.

**SECTION 14. Transport information.**

**C302025, C302041, C302042, C302051  
HYDROGUM**

The product is not dangerous under current provisions of the Code of International Carriage of Dangerous Goods by Road (ADR) and by Rail (RID), of the International Maritime Dangerous Goods Code (IMDG), and of the International Air Transport Association (IATA) regulations.

**14.1. UN number.**

Not applicable.

**14.2. UN proper shipping name.**

Not applicable.

**14.3. Transport hazard class(es).**

Not applicable.

**14.4. Packing group.**

Not applicable.

**14.5. Environmental hazards.**

Not applicable.

**14.6. Special precautions for user.**

Not applicable.

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

Information not relevant.

**SECTION 15. Regulatory information.****15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture.**

Seveso Category - Directive 2012/18/EC:

**C302025, C302041, C302042, C302051  
HYDROGUM**

Restrictions relating to the product or contained substances pursuant to Annex XVII to EC Regulation 1907/2006.

None.

Substances in Candidate List (Art. 59 REACH).

None.

Substances subject to authorisation (Annex XIV REACH).

None.

Substances subject to exportation reporting pursuant to (EC) Reg. 649/2012:

None.

Substances subject to the Rotterdam Convention:

None.

Substances subject to the Stockholm Convention:

None.

Healthcare controls.

Workers exposed to this chemical agent must not undergo health checks, provided that available risk-assessment data prove that the risks related to the workers' health and safety are modest and that the 98/24/EC directive is respected.

U.S. State Regulations California Proposition 65.

WARNING: This product can expose you to silica, crystalline (airborne particles of respirable size), which is known to the State of California to cause cancer. For more information, go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

#### **15.2. Chemical safety assessment.**

No chemical safety assessment has been processed for the mixture and the substances it contains.

### **SECTION 16. Other information.**

Text of hazard (H) indications mentioned in section 2-3 of the sheet:

<b>Acute Tox. 4</b>	Acute toxicity, category 4
<b>STOT RE 1</b>	Specific target organ toxicity - repeated exposure, category 1
<b>Asp. Tox. 1</b>	Aspiration hazard, category 1
<b>STOT RE 2</b>	Specific target organ toxicity - repeated exposure, category 2
<b>Eye Dam. 1</b>	Serious eye damage, category 1
<b>Eye Irrit. 2</b>	Eye irritation, category 2
<b>Aquatic Acute 1</b>	Hazardous to the aquatic environment, acute toxicity, category 1
<b>Aquatic Chronic 1</b>	Hazardous to the aquatic environment, chronic toxicity, category 1
<b>Aquatic Chronic 2</b>	Hazardous to the aquatic environment, chronic toxicity, category 2
<b>Aquatic Chronic 3</b>	Hazardous to the aquatic environment, chronic toxicity, category 3

**C302025, C302041, C302042, C302051  
HYDROGUM**

<b>Aquatic Chronic 4</b>	Hazardous to the aquatic environment, chronic toxicity, category 4
<b>H302</b>	Harmful if swallowed.
<b>H372</b>	Causes damage to organs through prolonged or repeated exposure.
<b>H304</b>	May be fatal if swallowed and enters airways.
<b>H373</b>	May cause damage to organs through prolonged or repeated exposure.
<b>H318</b>	Causes serious eye damage.
<b>H319</b>	Causes serious eye irritation.
<b>H400</b>	Very toxic to aquatic life.
<b>H410</b>	Very toxic to aquatic life with long lasting effects.
<b>H411</b>	Toxic to aquatic life with long lasting effects.
<b>H412</b>	Harmful to aquatic life with long lasting effects.
<b>H413</b>	May cause long lasting harmful effects to aquatic life.

**LEGEND:**

- ADR: European Agreement concerning the carriage of Dangerous goods by Road
- CAS NUMBER: Chemical Abstract Service Number
- CE50: Effective concentration (required to induce a 50% effect)
- CE NUMBER: Identifier in ESIS (European archive of existing substances)
- CLP: EC Regulation 1272/2008
- DNEL: Derived No Effect Level
- EmS: Emergency Schedule
- GHS: Globally Harmonized System of classification and labeling of chemicals
- IATA DGR: International Air Transport Association Dangerous Goods Regulation
- IC50: Immobilization Concentration 50%
- IMDG: International Maritime Code for dangerous goods
- IMO: International Maritime Organization
- INDEX NUMBER: Identifier in Annex VI of CLP
- LC50: Lethal Concentration 50%
- LD50: Lethal dose 50%
- OEL: Occupational Exposure Level
- PBT: Persistent bioaccumulative and toxic as REACH Regulation
- PEC: Predicted environmental Concentration
- PEL: Predicted exposure level
- PNEC: Predicted no effect concentration
- REACH: EC Regulation 1907/2006
- RID: Regulation concerning the international transport of dangerous goods by train
- TLV: Threshold Limit Value
- TLV CEILING: Concentration that should not be exceeded during any time of occupational exposure.
- TWA STEL: Short-term exposure limit
- TWA: Time-weighted average exposure limit
- VOC: Volatile organic Compounds
- vPvB: Very Persistent and very Bioaccumulative as for REACH Regulation
- WGK: Water hazard classes (German).

**GENERAL BIBLIOGRAPHY**

1. Regulation (EU) 1907/2006 (REACH) of the European Parliament
  2. Regulation (EU) 1272/2008 (CLP) of the European Parliament
  3. Regulation (EU) 790/2009 (I Atp. CLP) of the European Parliament
  4. Regulation (EU) 2015/830 of the European Parliament
  5. Regulation (EU) 286/2011 (II Atp. CLP) of the European Parliament
  6. Regulation (EU) 618/2012 (III Atp. CLP) of the European Parliament
  7. Regulation (EU) 487/2013 (IV Atp. CLP) of the European Parliament
  8. Regulation (EU) 944/2013 (V Atp. CLP) of the European Parliament
  9. Regulation (EU) 605/2014 (VI Atp. CLP) of the European Parliament
- The Merck Index. - 10th Edition
  - Handling Chemical Safety
  - INRS - Fiche Toxicologique (toxicological sheet)
  - Patty - Industrial Hygiene and Toxicology

**C302025, C302041, C302042, C302051  
HYDROGUM**

- N.I. Sax - Dangerous properties of Industrial Materials-7, 1989 Edition  
- ECHA website

**Note for users:**

A safety data sheet is not required for this product under article 31 of Regulation 1907/2006/EC.  
This safety data sheet has been created on a voluntary basis.

The information contained in the present sheet are based on our own knowledge on the date of the last version. Users must verify the suitability and thoroughness of provided information according to each specific use of the product.

This document must not be regarded as a guarantee on any specific product property.

The use of this product is not subject to our direct control; therefore, users must, under their own responsibility, comply with the current health and safety laws and regulations. The producer is relieved from any liability arising from improper uses.

Provide appointed staff with adequate training on how to use chemical products.

**Changes to previous review:**

The following sections were modified:

01 / 02 / 03 / 04 / 07 / 08 / 09 / 10 / 11 / 12 / 13 / 14 / 15 / 16.