

1 Identification

- **Product identifier**
 - *Product number* HXS5A16
 - *Trade name:* **HARDENER PU/WB**
 - *Application of the substance / the mixture* For professional use
- **Details of the supplier of the safety data sheet**
 - *Manufacturer/Supplier:*
IVM Chemicals Srl
Viale della Stazione 3 -27020 Parona (PV)Italy -Tel +39 038425441
 - *Information department:*
Environmental Health and safety office
hseoffice@ivmchemicals.com
 - *Emergency telephone number:*
ChemTel Expert Assistance Hotline/SDS Fax Access by dialing 1-800-255-3924 or for International +1-813-248-0585.

2 Hazard(s) identification

- **Classification of the substance or mixture**

Acute Toxicity - Inhalation 4	H332 Harmful if inhaled.
Eye Damage 1	H318 Causes serious eye damage.
Sensitization - Skin 1	H317 May cause an allergic skin reaction.
Specific Target Organ Toxicity - Single Exposure 3H335	May cause respiratory irritation.
Aquatic Acute 3	H402 Harmful to aquatic life.
Aquatic Chronic 3	H412 Harmful to aquatic life with long lasting effects.

· Label elements

- *GHS label elements*
The product is classified and labeled according to the Globally Harmonized System (GHS).
- *Hazard pictograms*



GHS05 GHS07

- *Signal word* Danger
- *Hazard-determining components of labeling:*
Homopolymers of HDI
Polyoxyethylene tridecyl ether phosphate
cyclohexyldimethylamine
hexamethylene diisocyanate
- *Hazard statements*
H332 Harmful if inhaled.
H318 Causes serious eye damage.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H402 Harmful to aquatic life.
H412 Harmful to aquatic life with long lasting effects.
- *Precautionary statements*
P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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P310 Immediately call a poison center/doctor.
P321 Specific treatment (see on this label).
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Classification system:

· NFPA ratings (scale 0 - 4)



Health = 3
Fire = 1
Reactivity = 0

· HMIS-ratings (scale 0 - 4)



Health = *3
Fire = 1
Reactivity = 0

3 Composition/information on ingredients

Chemical characterization: Mixtures

· Description: Mixture: consisting of the following components.

Dangerous components:

28182-81-2	Homopolymers of HDI ⚠ Acute Toxicity - Inhalation 4, H332; Sensitization - Skin 1, H317; Specific Target Organ Toxicity - Single Exposure 3, H335	75-100%
9046-01-9	Polyoxyethylene tridecyl ether phosphate ⚠ Eye Damage 1, H318 ⚠ Aquatic Chronic 2, H411 ⚠ Skin Irritation 2, H315 Aquatic Acute 2, H401	5-9.99%
98-94-2	cyclohexyldimethylamine ⚠ Flammable Liquids 3, H226 ⚠ Acute Toxicity - Oral 3, H301; Acute Toxicity - Dermal 3, H311; Acute Toxicity - Inhalation 3, H331 ⚠ Skin Corrosion 1B, H314; Eye Damage 1, H318	≥0.5-<1%
108-65-6	2-methoxy-1-methylethyl acetate ⚠ Flammable Liquids 3, H226 ⚠ Specific Target Organ Toxicity - Single Exposure 3, H336	<0.5%
822-06-0	hexamethylene diisocyanate ⚠ Acute Toxicity - Inhalation 1, H330 ⚠ Sensitization - Respiratory 1, H334 ⚠ Acute Toxicity - Oral 4, H302; Skin Irritation 2, H315; Eye Irritation 2A, H319; Sensitization - Skin 1, H317; Specific Target Organ Toxicity - Single Exposure 3, H335	≥0.1-<0.5%

4 First-aid measures

Description of first aid measures

· General information:

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

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- personal protective equipment for first aid responders is recommended. (please see section 8)*
- **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.
 - **After eye contact:**
Rinse opened eye for several minutes under running water. If symptoms persist , consult a doctor.
 - **After swallowing:** Do not induce vomiting; immediately call for medical help.
 - **Information for doctor:**
 - **Most important symptoms and effects, both acute and delayed**
Allergic reactions
For symptoms and effects caused by substances, refer to Section 11.
 - **Indication of any immediate medical attention and special treatment needed**
No further relevant information available.

5 Fire-fighting measures

- **Extinguishing media**
 - **Suitable extinguishing agents:**
CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
 - **For safety reasons unsuitable extinguishing agents:**
Do not use a jet water stream as it may scatter and spread fire.
- **Special hazards arising from the substance or mixture**
In case of fire, the following can be released:
Nitrogen oxides (NO_x)
Carbon monoxide (CO)
- **Advice for firefighters**
Cool by spraying with water the containers to prevent product decomposition and the development of substances potentially hazardous for health and also, in the case of closed containers exposed to flames to prevent explosions.
 - **Protective equipment:**
Hardhat with visor, fireproof clothing, suitable gloves and if necessary respiratory protective device.

6 Accidental release measures

- **Personal precautions, protective equipment and emergency procedures**
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
- **Environmental precautions:**
Do not allow product to reach sewage system or any water course.
Inform respective authorities in case of seepage into water course or sewage system.
Do not allow to enter sewers/ surface or ground water.
- **Methods and material for containment and cleaning up:**
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Use neutralizing agent.
Dispose contaminated material as waste according to Section 13.
Ensure adequate ventilation.
- **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.

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See Section 13 for disposal information.

· Protective Action Criteria for Chemicals

· PAC-1:		
28182-81-2	Homopolymers of HDI	7.8 mg/m
98-94-2	cyclohexyldimethylamine	1 mg/m
108-65-6	2-methoxy-1-methylethyl acetate	50 ppm
822-06-0	hexamethylene diisocyanate	0.018 ppm

· PAC-2:		
28182-81-2	Homopolymers of HDI	86 mg/m
98-94-2	cyclohexyldimethylamine	11 mg/m
108-65-6	2-methoxy-1-methylethyl acetate	1,000 ppm
822-06-0	hexamethylene diisocyanate	0.2 ppm

· PAC-3:		
28182-81-2	Homopolymers of HDI	510 mg/m
98-94-2	cyclohexyldimethylamine	66 mg/m
108-65-6	2-methoxy-1-methylethyl acetate	5000* ppm
822-06-0	hexamethylene diisocyanate	3 ppm

7 Handling and storage

· Handling:

· Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.

· Information about protection against explosions and fires: No special measures required.

· Conditions for safe storage, including any incompatibilities

· Storage:

· Requirements to be met by storerooms and receptacles:

Observe the label precautions, the expiration date for the use, if not indicated, is from delivery date of goods.

In cases where there is no reported expiration date, it means that the product must be used within 8 months.

· Information about storage in one common storage facility: Not required.

· Further information about storage conditions: Keep receptacle tightly sealed.

· Specific end use(s) Those typical of the product and the instructions in the data sheet if required.

8 Exposure controls/personal protection

· Additional information about design of technical systems: No further data; see item 7.

· Control parameters

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

The following constituents are the only constituents of the product which have a PEL, TLV or other recommended exposure limit.

At this time, the other constituents have no known exposure limits.

108-65-6 2-methoxy-1-methylethyl acetate

WEEL Long-term value: 50 ppm

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822-06-0 hexamethylene diisocyanate

REL	Long-term value: 0.035 mg/m , 0.005 ppm Ceiling limit value: 0.14* mg/m , 0.02* ppm *10-min
TLV	Long-term value: 0.005 ppm BEI

· **Ingredients with biological limit values:****822-06-0 hexamethylene diisocyanate**

BEI	15 g/g creatinine Medium: urine Time: end of shift Parameter: 1.6-Hexamethylene diamine with hydrolysis (nonspecific)
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· **Additional information:** The lists that were valid during the creation were used as basis.· **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.
- Avoid contact with the eyes and skin.

· **Breathing equipment:**

Short term filter device:



Suitable respiratory protective device recommended.

Filter A

· **Protection of hands:**

Protective gloves

Due to missing tests no recommendation to the glove material can be given for the product.
 Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

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

· **Material of 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**

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

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· Eye protection:



Tightly sealed goggles

9 Physical and chemical properties

· Information on basic physical and chemical properties

· General Information

· Appearance:

· Form:

Fluid

· Color:

According to product specification

· Odor:

Characteristic

· Odor threshold:

Not determined.

· pH-value:

Mixture is non-polar/aprotic.

Range: 7 - 9

· Change in condition

· Melting point/Melting range:

Undetermined.

· Boiling point/Boiling range:

444 °C (831.2 °F)

· Flash point:

120 °C (248 °F)

· Flammability (solid, gaseous):

Not applicable.

· Ignition temperature:

200 °C (392 °F)

· Decomposition temperature:

Not determined.

· Auto igniting:

Product is not selfigniting.

· Danger of explosion:

Product does not present an explosion hazard.

· Explosion limits:

· Lower:

0.8 Vol %

· Upper:

7 Vol %

· Vapor pressure:

Not determined.

· Density (+/- 0,03) at 20 °C (68 °F):

1.091 g/cm (9.104 lbs/gal)

· Relative density

Not determined.

· Vapor density

Not determined.

· Evaporation rate

Not determined.

· Solubility in / Miscibility with

· Water:

Not miscible or difficult to mix.

· Partition coefficient (n-octanol/water):

Not determined.

· Viscosity:

· Dynamic:

Not determined.

· Kinematic at 20 °C (68 °F):

30 s (ISO 3 mm)

· Oxidising properties:

N.A.

· Solvent content:

· VOC content:

1.69 %

18.5 g/l / 0.15 lb/gal

· Solids content:

98.3 %

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· **Other information (HAPS)**

822-06-0	hexamethylene diisocyanate	≥0.1-<0.5%
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· **Other information** No further relevant information available.

10 Stability and reactivity

- **Reactivity** typical of the product as indicated in the data sheet
- **Chemical stability** The product is stable in normal conditions of storage and use recommended
 - **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
- **Possibility of hazardous reactions** No dangerous reactions known.
- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** Acids, alkalis and oxidizing agents
- **Hazardous decomposition products:** No dangerous decomposition products known.

11 Toxicological information

· **Information on toxicological effects**

· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

ATE (Acute Toxicity Estimate)

Oral	LD50	20,201 mg/kg (mouse)
Dermal	LD50	40,302 mg/kg
Inhalative	LC50/4 h	10.1 mg/l

28182-81-2 Homopolymers of HDI

Oral	LD50	2,501 mg/kg (mouse)
Dermal	LD50	2,001 mg/kg (rabbit)

98-94-2 cyclohexyldimethylamine

Oral	LD50	201 mg/kg (mouse)
Dermal	LD50	401 mg/kg (rabbit)
Inhalative	LC50/4 h	4.45 mg/l (mouse)

108-65-6 2-methoxy-1-methylethyl acetate

Oral	LD50	8,532 mg/kg (mouse)
Dermal	LD50	5,001 mg/kg (rabbit)
Inhalative	LC50/4 h	35.7 mg/l (mouse)

822-06-0 hexamethylene diisocyanate

Oral	LD50	738 mg/kg (mouse)
Dermal	LD50	7,001 mg/kg (rabbit)
Inhalative	LC50/4 h	0.124 mg/l (mouse)

· **Primary irritant effect:**

· **on the skin:** No irritant effect.

· **on the eye:**

Strong caustic effect.

Strong irritant with the danger of severe eye injury.

· **Sensitization:** Sensitization possible through skin contact.

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· **Additional toxicological information:**

Harmful

Irritant

Harmful if inhaled.

Causes serious eye damage.

May cause an allergic skin reaction.

May cause respiratory irritation.

Contains isocyanates. May produce an allergic reaction.

As from 24 August 2023 adequate training is required before industrial or professional use.

· **Carcinogenic categories**

· **IARC (International Agency for Research on Cancer - Cl. 1 and 2)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

· **Sensitisation**

Hexamethylene-1,6-diisocyanate

Skin sensitization according to Magnusson / Klingmann (maximization test): guinea pig positive Result

Method OECD TG 406

Respiratory sensitization guinea pig

May cause sensitization by inhalation

Monomers / polymers isocyanate

Particular characteristics / effects; prolonged exposure may irritate the eyes, nose, throat and respiratory tract.

Isocyanate exposure may result in the delayed appearance of respiratory disorders, cough or asthma. Sensitive individuals may show exposure symptoms to isocyanates below workplace TLV values. Prolonged skin contact may result cause irritation and dehydration.

12 Ecological information

· **Toxicity Harmful to aquatic life with long lasting effects.**

· **Aquatic toxicity:**

28182-81-2 Homopolymers of HDI

EC50 1,001 mg/l (algae) (72 h)
 127 mg/l (daphnia) (48 h)

LC50 (96h) 100 mg/l (Fish)

98-94-2 cyclohexyldimethylamine

EC50 2.1 mg/l (algae) (72 h)
 45 mg/l (daphnia) (48 h)

LC50 (96h) 23 mg/l (Fish)

108-65-6 2-methoxy-1-methylethyl acetate

EC50 1,001 mg/l (algae) (72 h)
 501 mg/l (daphnia) (48 h)

LC50 (96h) 134 mg/l (Fish)

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822-06-0 hexamethylene diisocyanate

EC50	77.5 mg/l (algae) (72 h)
	89.2 mg/l (daphnia) (48 h)
LC50 (96h)	82.9 mg/l (Fish)

- **Persistence and degradability** No further relevant information available.
- **Behavior in environmental systems:**
 - *Bioaccumulative potential* No further relevant information available.
 - *Mobility in soil* No further relevant information available.
- **Ecotoxicological effects:**
 - *Remark: Harmful to fish*
- **Additional ecological information:**
 - *General notes:*
 Water hazard class 2 (Self-assessment): hazardous for water
 Do not allow product to reach ground water, water course or sewage system.
 Must not reach bodies of water or drainage ditch undiluted or unneutralized.
 Danger to drinking water if even small quantities leak into the ground.
 Harmful to aquatic organisms
- **Other adverse effects** No further relevant information available.

13 Disposal considerations

- **Waste treatment methods**
 - *Recommendation:*
 Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
 Hand over to hazardous waste disposers.
 Dispose of contents and container in accordance with local state and federal regulations.
- **Uncleaned packagings:**
 - *Recommendation:* Disposal must be made according to official regulations.

14 Transport information

- **UN-Number**
 - DOT, ADN, IMDG, IATA Not applicable
 - Note Check viscosity and flash point at section 9
- **UN proper shipping name**
 - DOT, ADN, IMDG, IATA Not applicable
- **Transport hazard class(es)**
 - DOT, ADR, ADN, IMDG, IATA
 - Class Not applicable
- **Packing group**
 - DOT, IMDG, IATA Not applicable
- **Environmental hazards:**
 - Marine pollutant: No
- **Special precautions for user** Not applicable.

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- **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code** Not applicable.
- **UN "Model Regulation":** Not applicable

15 Regulatory information

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

- **Various regulations**
 - SARA

- **Section 355 (extremely hazardous substances):**

None of the ingredients is listed.

- **Section 313 (Specific toxic chemical listings) :**

822-06-0	hexamethylene diisocyanate	≥0.1-<0.5%
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- **TSCA (Toxic Substances Control Act):**

All components have the value ACTIVE.

- **Hazardous Air Pollutants**

822-06-0	hexamethylene diisocyanate
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- **Proposition 65**

- **Chemicals known to cause cancer:**

None of the ingredients is listed.

- **Chemicals known to cause reproductive toxicity for females:**

70657-70-4	2-methoxypropyl acetate	<0.01%
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- **Chemicals known to cause reproductive toxicity for males:**

None of the ingredients is listed.

- **Chemicals known to cause developmental toxicity:**

None of the ingredients is listed.

- **Carcinogenic categories**

- **EPA (Environmental Protection Agency)**

None of the ingredients is listed.

- **TLV (Threshold Limit Value)**

None of the ingredients is listed.

- **NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

- **National regulations:**

The product is subject to be labeled according with the prevailing version of the regulations on hazardous substances.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

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.

- **Department issuing SDS:** IVM Chemicals Srl

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- **Contact:** See emergency phone

- **Date of preparation / last revision** 08/08/2022 / 7

- **Abbreviations and acronyms:**

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

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)

NFPA: National Fire Protection Association (USA)

HMIS: Hazardous Materials Identification System (USA)

VOC: Volatile Organic Compounds (USA, EU)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

NIOSH: National Institute for Occupational Safety

OSHA: Occupational Safety & Health

TLV: Threshold Limit Value

PEL: Permissible Exposure Limit

REL: Recommended Exposure Limit

BEI: Biological Exposure Limit

Flammable Liquids 3: Flammable liquids . Category 3

Acute Toxicity - Oral 3: Acute toxicity . Category 3

Acute Toxicity - Inhalation 1: Acute toxicity . Category 1

Acute Toxicity - Inhalation 4: Acute toxicity . Category 4

Skin Corrosion 1B: Skin corrosion/irritation . Category 1B

Skin Irritation 2: Skin corrosion/irritation . Category 2

Eye Damage 1: Serious eye damage/eye irritation . Category 1

Eye Irritation 2A: Serious eye damage/eye irritation . Category 2A

Sensitization - Respiratory 1: Respiratory sensitisation . Category 1

Sensitization - Skin 1: Skin sensitisation . Category 1

Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) . Category 3

Aquatic Acute 2: Hazardous to the aquatic environment - acute aquatic hazard . Category 2

Aquatic Acute 3: Hazardous to the aquatic environment - acute aquatic hazard . Category 3

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

- **Sources**

REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL and following amendments

Agency ECHA web site

INRS Fiche Toxicologique

IARC International agency for research on cancer

- * **Data compared to the previous version altered.**