Safety data sheet

according to 1907/2006/EC, Article 31

Printing date 17.12.2020 Version number 2.0 Revision: 17.12.2020

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

1.1 Product identifier

Trade name: **Hardener for 2K Wood Oil**

Article number: 6633
CAS Number: 28182-81-2
NLP Number: 500-060-2
Registration number 01-2119488934-20

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

Use : Hardener for coating materials or adhesives for industrial and trade applications
Uses advised against : Not suitable for use in homeworker (DIY) applications.

Application of the substance / the mixture

Hardening agent/ Curing agent

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Osmo Holz und Color GmbH & Co. KG
Affhüppen Esch 12
D-48231 Warendorf

Further information obtainable from:

Product safety department
Tel.: +49 (0) 251 / 692 - 188
Fax: +49 (0) 251 / 692 - 462
e-mail: helmut.starp@osmo.de

1.4 Emergency telephone number:

emergency phone no. Berlin (24h): +49 (0) 30 / 30686 790 advisory service in German and English

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Acute Tox. 4 H332 Harmful if inhaled.
Skin Sens. 1 H317 May cause an allergic skin reaction.
STOT SE 3 H335 May cause respiratory irritation.

2.2 Label elements

Hazard pictograms

GHS07

Signal word Warning

Hazard-determining components of labelling:

Hexamethylene diisocyanate, oligomers
hexamethylene-di-isocyanate

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Hazard statements H332 Harmful if inhaled.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.

Precautionary statements
P261 Avoid breathing mist/vapours/spray.
P280 Wear protective gloves.
P362+P364 Take off contaminated clothing and wash it before reuse.
P405 Store locked up.
P501 Dispose of contents/container in accordance with national regulations.

Additional information: Restricted to professional users.

2.3 Other hazards Observe the general safety regulations when handling chemicals.

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

3.1 Substances

CAS No. Description 28182-81-2 Hexamethylen-1,6-diisocyanat homopolymer

Identification number(s)

NLP Number: 500-060-2

Impurities and stabilising additives:

CAS: 822-06-0 EINECS: 212-485-8 Index number: 615-011-00-1 Reg.nr.: 01-2119457571-37	hexamethylene-di-isocyanate Acute Tox. 3, H311; Acute Tox. 3, H331; Resp. Sens. 1, H334; Acute Tox. 4, H302; Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317; STOT SE 3, H335, EUH204 Specific concentration limits: Resp. Sens. 1; H334: C ≥ 0.5 % Skin Sens. 1; H317: C ≥ 0.5 %	<0.1%

Description: Substance

Dangerous components:

CAS: 28182-81-2 NLP: 500-060-2 Reg.nr.: 01-2119488934-20	Hexamethylene diisocyanate, oligomers Acute Tox. 4, H332; Skin Sens. 1, H317; STOT SE 3, H335	>99.9%

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

SECTION 4: First aid measures

4.1 Description of first aid measures

General information: Immediately remove any clothing soiled by the product.
Symptoms of poisoning may even occur after several hours; therefore medical observation for at least 48 hours after the accident.

After inhalation: Take affected persons into fresh air and keep quiet.

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Seek medical treatment in case of complaints.
Supply fresh air and to be sure call for a doctor.
In case of unconsciousness place patient stably in side position for transportation.

After skin contact: Immediately wash with water and soap and rinse thoroughly.
If skin irritation continues, consult a doctor.

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

After swallowing: Rinse mouth.
Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed No further relevant information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing agents: CO_2, powder or water spray. Fight larger fires with water spray.
Use fire extinguishing methods suitable to surrounding conditions.

For safety reasons unsuitable extinguishing agents: Water with full jet

5.2 Special hazards arising from the substance or mixture CO_2
Carbon monoxide (CO)
Isocyanate vapors
Nitrogen oxides (NOx)
(Traces)
Hydrogen cyanide (HCN)

5.3 Advice for firefighters

Protective equipment: Do not inhale explosion gases or combustion gases.
Wear fully protective suit.
Mouth respiratory protective device.
Wear self-contained respiratory protective device.

Additional information Collect contaminated fire fighting water separately. It must not enter the sewage system.
Cool endangered receptacles with water spray.

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Ensure adequate ventilation
Wear protective clothing.

6.2 Environmental precautions:
No special measures required.

6.3 Methods and material for containment and cleaning up:
Remove mechanically; cover remainders with wet, absorbent material (eg. as sawdust, chemical binder based on calcium silicate hydrate, sand). After approx. 1 hour transfer to waste container and do not seal (formation of CO2!).
Keep damp in a safe ventilated area for several days.
Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders).
Dispose of the material collected according to regulations.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

6.4 Reference to other sections
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
When spraying air suction is required. Noted in Chapter 8 airborne concentrations should be monitored. At workplaces where isocyanate aerosols and / or vapors may occur in higher concentrations, must by deliberate air extraction exceeding hygienic workplace limits are prevented. The air must be moved away from the personnel. The personal protective measures described in Chapter 8 must be observed. The precautions required when handling isocyanates must be observed. Avoid contact with skin and eyes and do not breathe vapors.
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
Avoid contact with skin and eyes.

General protective and hygienic measures:
Be sure to clean skin thoroughly after work and before breaks.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Avoid contact with the eyes and skin.

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Information about fire - and explosion protection: Fumes can combine with air to form an explosive mixture.

7.2 Conditions for safe storage, including any incompatibilities

Storage:

Requirements to be met by storerooms and receptacles: Prevent any seepage into the ground.
Store only in the original receptacle.

Information about storage in one common storage facility: Store away from foodstuffs.

Further information about storage conditions: Store receptacle in a well ventilated area.
Store in dry conditions.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed receptacles.

Storage class: VCI storage class (VCI = German Association of the Chemical Industry): 10

7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:	
822-06-0 hexamethylene-di-isocyanate	
WEL	Short-term value: 0.07 mg/m³ Long-term value: 0.02 mg/m³ Sen; as -NCO

DNELs		
28182-81-2 Hexamethylene diisocyanate, oligomers		
Inhalative	DNEL	0.5 mg/m³

PNECs	
28182-81-2 Hexamethylene diisocyanate, oligomers	
PENEC marine water	0.0127 mg/l
PENEC Sediment fresh water	266,701 mg/kg /Trock
PNEC soil	53,183 mg/kg /Trocke
PNEC STP	88 mg/l
PNEC fresh water	0.127 mg/l
PNEC Sediment marine water	26,670 mg/kg /Trocke

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Ingredients with biological limit values:	
822-06-0 hexamethylene-di-isocyanate	
BMGV	1 µmol creatinine/mol Medium: urine Sampling time: At the end of the period od exposure Parameter: isocyanate-derived diamine

Additional information: The lists valid during the making were used as basis.

8.2 Exposure controls

Appropriate engineering controls No further data; see item 7.

Individual protection measures, such as personal protective equipment

General protective and hygienic measures:
Wash hands before breaks and at the end of work.
Do not eat, drink, smoke or sniff while working.
Do not carry product impregnated cleaning cloths in trouser pockets.
Keep away from foodstuffs, beverages and feed.
Avoid contact with the eyes and skin.
Immediately remove all soiled and contaminated clothing

Respiratory protection:
In case of hypersensitivity of the respiratory tract and skin (e.g. asthmatics and those who suffer from chronic bronchitis and chronic skin complaint) it is inadvisable to work with the product.
Use a properly fitted, air-purifying or air-fed repirator complying with an approved standard if a risk assessment indicates this is necessary.
Half mask with round thread connection EN 148-1 (screw-on filter) and combination filter A1 - P2 according to German DIN EN 14387.
Not necessary if room is well-ventilated.

Hand protection
Protective gloves
The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

Material of gloves
Butyl rubber, BR
Fluorocarbon rubber (Viton)
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.

Penetration time of glove material
The exact break trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

For the permanent contact gloves made of the following materials are suitable:
chemical resistant gloves (EN 374)
Butyl rubber, BR

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For the mixture the penetration time has to be at least 480 minutes
(Permeation according to EN 374 Part 3: Level 6).
Recommended thickness of the material: ≥ 0.5 mm

Not suitable are gloves made of the following materials: Nitrile rubber, NBR

Eye/face protection Face protection
Safety glasses according to EN 166:2001 (e.g. densely closing frame glasses with side protection)

Body protection: Use protective suit.
Protective work clothing

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

General Information	
Colour:	Colourless
Odour:	Nearly odourless
Odour threshold:	Not determined.
Melting point/freezing point:	Undetermined.
Boiling point or initial boiling point and boiling range	not applicable
Flammability	Not applicable.
Flash point:	~158 °C (DIN 53213, 28182-81-2 Hexamethylene diisocyanate, oligomers)
Auto-ignition temperature:	Product is not selfigniting.
Decomposition temperature:	Not determined.
pH	Not applicable
Viscosity:	
Kinematic viscosity	Not determined.
Dynamic at 20 °C:	~1200 mPas (DIN EN ISO 3219/A.3)
Solubility	
water:	Not miscible or difficult to mix.
Partition coefficient n-octanol/water (log value)	Not determined.
Vapour pressure at 20 °C:	<0.00003 hPa (EG A4, 28182-81-2 Hexamethylene diisocyanate, oligomers)
Density and/or relative density	
Density at 20 °C:	~1.17 g/cm³ (DIN 53217)
Relative density	Not determined.

9.2 Other information

Appearance:	
Form:	Fluid

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Important information on protection of health and environment, and on safety.	
Ignition temperature:	~445 °C (DIN 51794, 28182-81-2 Hexamethylene diisocyanate, oligomers)
Explosive properties:	Product does not present an explosion hazard.

Information with regard to physical hazard classes

Explosives

Void

Flammable gases

Void

Aerosols

Void

Oxidising gases

Void

Gases under pressure

Void

Flammable liquids

Void

Flammable solids

Void

Self-reactive substances and mixtures

Void

Pyrophoric liquids

Void

Pyrophoric solids

Void

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Self-heating substances and mixtures

Void

Substances and mixtures, which emit flammable gases in contact with water

Void

Oxidising liquids

Void

Oxidising solids

Void

Organic peroxides

Void

Corrosive to metals

Void

Desensitised explosives

Void

SECTION 10: Stability and reactivity

10.1 Reactivity No further relevant information available.

10.2 Chemical stability

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

10.3 Possibility of hazardous reactions Reacts with alcohols.
Reacts with amines.
Decomposes with water, acids and alkalis.
Exothermic reaction.
Danger of bursting.

10.4 Conditions to avoid No further relevant information available.

10.5 Incompatible materials: No further relevant information available.

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10.6 Hazardous decomposition products: No hazardous decomposition products when stored and handled correctly.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity Harmful if inhaled.

LD/LC50 values relevant for classification:		
Inhalative	ATE-Wert (Nebel)	1.5 mg/l (rat)

28182-81-2 Hexamethylene diisocyanate, oligomers		
Oral	LD50	>2,500 mg/kg (rat) (OECD- Prüfrichtlinie 423)
Dermal	LD50	>2,000 mg/kg (rat) (Acute Dermal Toxicity)

Skin corrosion/irritation		
28182-81-2 Hexamethylene diisocyanate, oligomers		
Dermal	Skin irritation	(rabbit) (OECD- Prüfrichtlinie 404)

Based on available data, the classification criteria are not met.

Serious eye damage/irritation	
28182-81-2 Hexamethylene diisocyanate, oligomers	
Eye irritation	(rabbit)

Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation		
28182-81-2 Hexamethylene diisocyanate, oligomers		
Inhalative	sensitization	(mouse) (Lokaler Lymphknoten-Test (LLNA))

May cause an allergic skin reaction.

Germ cell mutagenicity Based on available data, the classification criteria are not met.

Carcinogenicity Based on available data, the classification criteria are not met.

Reproductive toxicity Based on available data, the classification criteria are not met.

STOT-single exposure May cause respiratory irritation.

STOT-repeated exposure Based on available data, the classification criteria are not met.

Aspiration hazard Based on available data, the classification criteria are not met.

Other information (about experimental toxicology): Animal tests and other research indicate that skin contact with diisocyanates can play a role in causing isocyanate sensitization and respiratory reaction.

Subacute to chronic toxicity:	
28182-81-2 Hexamethylene diisocyanate, oligomers	
NOAEL	3.3 mg/Tag /inhalativ (rat)

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Additional toxicological information: Special properties/effects: Over-exposure, especially when spraying coatings containing isocyanate without the necessary precautions, entails the risk of concentration-dependent irritating effects on eyes, nose throat, and respiratory tract. Delayed appearance of the complaints and development of hypersensitivity (difficult breathing, coughing, asthma) are possible. Hypersensitive persons may suffer from these effects even at low isocyanate concentrations, including concentrations below the UK Workplace Exposure Limit (WEL). Prolonged contact with the skin may cause tanning and irritant effects.
May cause an allergic skin reaction.

Sensitisation May cause an allergic skin reaction.

CMR effects (carcinogenity, mutagenicity and toxicity for reproduction) Genotoxicity in vitro:
hexamethylene-1,6-diisocyanate homopolymer
Test type: Ames test; Result: negative; Method: OECD Test Guideline 471

Test type: Chromosome aberration test in vitro
Result: negative; Method: OECD Test Guideline 473
Toxicological studies of a comparable product.

Test type: Point mutation in mammalian cells (HPRT test)
Result: negative; Method: OECD Test Guideline 476
Toxicological studies of a comparable product.

11.2 Information on other hazards

Endocrine disrupting properties
None of the ingredients is listed.

SECTION 12: Ecological information

12.1 Toxicity

Aquatic toxicity: Do not allow product to reach ground water, water course or sewage system.

28182-81-2 Hexamethylene diisocyanate, oligomers	
EC50 / 48h	>100 mg/l (daphnia) (OECD- Prüfrichtlinie 202)
IC50 / 72h	>1,000 mg/l (algae) (DIN 38412)
LC50 / 96h	>100 mg/l (Brachydanio rerio) (OECD- Prüfrichtlinie 203)
Biolog. Abbaubarkeit	28 % (OECD Guideline for Testing of Chemicals, No.301 D)
Biokonz.-Faktor	3.2 /(berechnet)

12.2 Persistence and degradability Not easily biodegradable

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12.3 Bioaccumulative potential	
28182-81-2 Hexamethylene diisocyanate, oligomers	
log POW	~8.38 (Wert berechnet)

12.4 Mobility in soil Oberflächenspannung: ca. 46,5 mN/m bei 20 °C

12.5 Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

12.6 Endocrine disrupting properties The product does not contain substances with endocrine disrupting properties.

12.7 Other adverse effects

Behaviour in sewage processing plants:	
28182-81-2 Hexamethylene diisocyanate, oligomers	
EC0 / 3h	>100 mg/l (daphnia)
EC50	3,828 mg/l (activated sludge organism) (OECD Guideline for Testing of Chemicals, No.209)

Additional ecological information:

General notes: The resin reacts with water at the interface forming CO2 and a solid insoluble product with high melting point (polyurea). This reaction is accelerated by surfactants (e.g. detergents) or by watersoluble solvents. Previous experience shows that polyurea is inert and non-degradable.
Water hazard class 1 (German Regulation) (Self-assessment): slightly hazardous for water

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Recommendation Must not be disposed together with household garbage. Do not allow product to reach sewage system.
Disposal must be made according to official regulations.

European waste catalogue	
08 05 01*	waste isocyanates
15 01 10*	packaging containing residues of or contaminated by hazardous substances

Uncleaned packaging:

Recommendation: Waste treatment methods:
After final product withdrawal, all residues must be removed from containers (drip-free, powderfree or paste-free). Once the product residues adhering to the walls of the containers have been rendered harmless, the product and hazard labels must be invalidated. These containers can be returned for recycling to the appropriate centres set up within the framework of the existing takeback scheme of the chemical industry. Containers must be recycled in compliance with national legislation and environmental regulations.

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SECTION 14: Transport information

14.1 UN number or ID number **ADR, ADN, IMDG, IATA**	Not applicable
14.2 UN proper shipping name **ADR, ADN, IMDG, IATA**	Not applicable
14.3 Transport hazard class(es) **ADR, ADN, IMDG, IATA** **Class**	Not applicable
14.4 Packing group **ADR, IMDG, IATA**	Not applicable
14.5 Environmental hazards: **Marine pollutant:**	No
14.6 Special precautions for user	Not applicable.
14.7 Maritime transport in bulk according to IMO instruments	Not applicable.
Transport/Additional information:	Not dangerous according to the above specifications. Special precautions for user : Not dangerous cargo. Slight smell. Keep dry. Avoid heat above +50 °C. Keep away from foodstuffs, acids and alkalis.
UN "Model Regulation":	Not applicable

SECTION 15: Regulatory information

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

REGULATION (EC) No 1907/2006 ANNEX XVII Conditions of restriction: 3, 74

DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II

None of the ingredients is listed.

National regulations:

Other regulations, limitations and prohibitive regulations Other regulations: The European Committee of Paint, Printing Ink and Artists' Colours Manufacturers' Associations (CEPE) provides the following information on coatings containing isocyanates: Ready-to-use paints containing isocyanates may have an irritant effect on mucous membranes - especially on breathing organs - and cause hypersensitivity reactions.

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Inhalation of vapor or spray mist may cause sensitisation. When handling paints containing isocyanates all precautions required for solvent-containing paints must be followed. Vapor and spray mist in particular should not be inhaled. Allergics and asthmatics as well as people prone to respiratory ailments should not work with isocyanate containing paints.

15.2 Chemical safety assessment: A Chemical Safety Assessment has been carried out.

SECTION 16: Other information

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

Reasons for alterations Reach Annex II (2021)

Relevant phrases H317 May cause an allergic skin reaction.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.

Recommended restriction of use The product is used as a hardener in coating materials. Appropriate protective measures are required to deal with coating materials that contain reactive polyisocyanates and residual monomeric HDI (see also this safety data sheet). They may therefore only be used in industrial or professional applications. They are not suitable for use in do-it-yourself applications.

Department issuing SDS: product safety department

Contact: Hr. Dr. Starp

Version number of previous version: 1.0

Abbreviations and acronyms:
ICAO: International Civil Aviation Organisation
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
IATA: International Air Transport Association
GHS: Globally Harmonised System of Classification and Labelling of Chemicals
EINECS: European Inventory of Existing Commercial Chemical Substances
ELINCS: European List of Notified Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
DNEL: Derived No-Effect Level (REACH)
PNEC: Predicted No-Effect Concentration (REACH)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
PBT: Persistent, Bioaccumulative and Toxic
vPvB: very Persistent and very Bioaccumulative
Acute Tox. 4: Acute toxicity - inhalation – Category 4
Skin Sens. 1: Skin sensitisation – Category 1
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3