1.) Identification of the substance/preparation and company

Product details

Trade name
HARDENER H2

Identification of the manufacturer / supplier

Address
Marabuwerke GmbH & Co. KG
Asperger Straße 4
D-71732 Tamm, Germany

Telephone no. +49 7141/691-0

Fax no. +49 7141/691-235

Information provided by / telephone
product safety/+49 7141/691-116 or 232

Emergency telephone number
product safety/+49 7141/691-116 or 232

2.) Composition / information on ingredients

Chemical characterization
Polyfunctional aromatic isocyanate in solvents

Hazardous ingredients

N-BUTYL ACETATE

CAS no.	123-86-4				
Concentration	>=	30	<	35	%-b.w.
Hazard symbols	-		R phrases		10, 66, 67

TOLUENE-2,4-DI-ISOCYANATE (1), TOLUENE-2,6- DI-ISOCYANATE (2)

CAS no.	584-84-9				
Concentration	<	0,5			%-b.w.
Hazard symbols	T		R phrases		26, 36/37/38, 40, 42/43, 52/53

3.) Hazards possibilities

Hazard symbols

Xn Harmful

R phrases

10	Flammable.
20	Harmful by inhalation.
42	May cause sensitization by inhalation.

Particular information pertaining specific risk for human / environment
The product is water polluting.

4.) First aid measures

General information
Immediately remove all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical attention. Unconsciousness: lateral position - call a physician.

After inhalation
Take the casualty into the fresh air and keep warm. Irregular breathing/no breathing: artificial respiration. Call a physician.

After skin contact
Wash away with soap and water and rinse. Do NOT use solvents or thinners!

After eye contact
Flush with plenty of water (10 - 15 min.). Call a physician.

After ingestion
Call a doctor. Keep at rest. Do not induce vomiting.

5.) Firefighting measures

Suitable extinguishing media
Carbon dioxide, foam, sand, dry extinguishing agent.

Extinguishing media that must not be used for safety reasons
Waterjet should not be used because water is not mixable with a lot of organic solvents and such solvents will spread on the water surface.

Special exposure hazards arising from the substance or preparation itself, its combustion products or from resulting gases
In case of fire, dangerous smoke gases such as carbon dioxide, carbon monoxide, soot, nitrogen oxides, isocyanate vapours and traces of cyanic acids can be produced. Therefore, take suitable precautionary measures for fire fighting. Residues remaining after a fire have to be disposed of appropriately.

Special protective equipment for firefighting
Breathing apparatus with an independent source of air may be required.

Other information (chapter 5.)
Cool endangered containers with water in case of fire.

6.) Accidental release measures

Personal precautions
Keep away from sources of ignition. Provide for good ventilation. Do not breathe vapours. Refer to protective measures listed in sections 7 and 8.

Environmental precautions
Do not empty into drains. If the product contaminates lakes, rivers or sewages, inform appropriate authorities in accordance with local regulations.

Methods for cleaning up/taking up
Cover with humid liquid absorbing material (e.g. sand or sawdust). After about one hour, take off into waste bin, but do not cover (carbon dioxide development). Keep damp and allow to stand in a secure area in the open air, for a few more days. Further disposal by incineration (see point 13). The contaminated area should be cleaned up immediately with a suitable decontaminant. One possible (flammable) decontaminant comprises (by volume): water (45 parts), ethanol or isopropyl alcohol (50 parts) concentrated ammonia solution (5 parts). A non-flammable alternative is sodium carbonate (5 parts), water (95 parts).

7.) Handling and storage

Handling

Advice on safe handling
Prevent the creation of flammable or explosive concentrations of vapour in air and avoid vapour concentration higher than the occupational exposure limit. Do not leave containers open. The product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Avoid contact with skin and eyes. Avoid inhalation of vapour and spray mist. When using do not eat, drink or smoke. Comply with the health and safety at work laws.

Advice on protection against fire and explosion
Vapours are heavier than air and may spread along floors. Vapours may form explosive mixtures with air. Preparation may charge electrostatically: always use earthing leads when transferring from one container to another. Operators should wear antistatic footwear and clothing. No sparking tools should be used.

Classification of fires
B (Combustible liquid substances)

Ignition group
T2

Storage

Requirements for storage rooms and vessels
Recommended storage temperature: 15-20°C. Keep container tightly closed. Never use pressure to empty: container is not a pressure vessel. No smoking. Prevent unauthorized access. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Hints on storage assembly
Keep away from oxidising agents, from strongly alkaline and strongly acid materials as well as from amines, alcohols and water.

Further information on storage conditions
Always keep in containers of same material as the original one. Precautions should be taken to minimise exposure to atmospheric humidity or water: CO2 will be formed which in closed containers can result in pressuration; danger of bursting!; Observe label precautions. Store between 15 and 20°C in a dry, well ventilated place away from sources of heat and direct sunlight. Keep away from sources of ignition.

8.) Exposure controls / personal protection

Additional hints on technical system design.
Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. During spraying, even in well ventilated conditions, wear breathing apparatus which is not dependent on the air in the immediate vicinity. Otherwise, if the local exhaust ventilation or general extraction is not sufficient to maintain concentration of solvent vapour below the OEL, suitable respiratory protection must be worn.

Ingredients with occupational exposure limits to be monitored
N-BUTYL ACETATE

CAS no.	123-86-4			
EINECS no.	204-658-1			
OES/EH40				
LTEL	150	ml/m³	724	mg/m³
STEL	200	ml/m³	966	mg/m³

Personal protective equipment

Respiratory protection
By spraying: air fed respirator. By other operations than spraying: in well ventilated areas, airfed respirators could be replaced by a combination of charcoal filter and particulate filter mask.
Respiratory filter (gas) : A
Respiratory filter (part): P2

Hand protection
Use protective gloves.

Eye protection
Use safety glasses.

Skin protection

Personal should wear antistatic clothing made of natural fiber or of high temperature resistant synthetic fiber. All parts of the body should be washed after contact. Use re-greasing skin cream.

General protective and hygiene measures

The usual precautionary measures for the handling of chemicals have to be observed.

9.) Physical and chemical properties

Appearance

Form	liquid
Colour	clear, yellow-tinged
Odour	characteristic

Safety data

Changes in physical state

Type	Boiling point (initial)		
Value	125		°C

Flash point

Value	31		°C
Method	ASTM D 6450 (CCCFP)		

Ignition temperature

Value	420		°C

Explosion limits

Upper explosion limit	7,5		% vol
Lower explosion limit	1,2		% vol

Vapour pressure

Value	13		hPa
Reference temperature	20	°C	

Density

Value	1,15		g/cm³
Reference temperature	20	°C	

Viscosity

Type	Flow time		
Value	> 90		sec
Reference temperature	20	°C	
Value	940		mPa.s
Reference temperature	20	°C	

Solubility in water

Remarks	parts of solvents

Other information (chapter 9.)

The physical specifications are approximate values and refer to the used safety relevant component(s).

10.) Stability and reactivity

Conditions to avoid

Stable under recommended storage and handling conditions (See section 7).

Materials to avoid

Keep away from oxidising agents, strongly alkaline and strongly acid materials. Exothermic reactions occur with amines and alcohols. Preparation reacts slowly with water resulting in evolution of CO2 which produces a risk of bursting in closed containers.

Hazardous decomposition products

When exposed to high temperatures, dangerous decomposition products such as carbon dioxide, carbon monoxide, soot, nitrogen oxides, isocyanate vapours and traces of cyanic acids can be produced.

11.) Toxicological information

Experience in practice

Exposure to component solvents vapours concentration in excess of the stated occupational exposure limit may result in adverse health effect such as mucous membrane and respiratory system irritation and adverse effect on kidney, liver and central nervous system. Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Solvents may cause symptoms like described above by absorption through the skin. Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin resulting in non-allergic contact dermatitis and absorption through the skin.
Splashes in the eyes may cause pronounced burning pains.
If swallowed, stomach complaints and irritation of the digestive organs may result.

Other information (chapter 11.)

Based on the properties of the isocyanate components and considering toxicological data on similar preparations, this preparation may cause acute irritation and/or sensitization of the respiratory system leading to an asthmatic condition, wheeziness and a tightness of the chest. Sensitized persons may subsequently show asthmatic symptoms when exposed to atmospheric concentrations well below the OEL. Repeated exposure may lead to permanent respiratory disability.
The product was classified in toxicological terms on the basis of the results of the calculation procedure outlined within General Directive on Preparations (88/379/EEC).

12.) Ecological information

General information / ecology

There are no data available on the preparation itself.
Do not empty into waters or drains

13.) Disposal considerations

Product

Small residues in containers can be converted by a blend of isopropanol, ammonia and water (see also point 6). Remove classification labels afterwards. Dispose of large quantities in semi-reactivated form in accordance with the applicable regulations.
Code of waste pursuant to European Council Directive on waste: 080302 (Wastes from the manufacture, formulation, supply and use (MFSU) of coatings (paints, varnishes and vitreous enamels), adhesive, sealants and printing inks - wastes from MFSU of printing inks - waste ink free of halogenated solvents).

Uncleaned packaging

Dispose of only completely emptied containers!
Code of waste pursuant on European Council Directive on waste: 150104 (Packaging; absorbents, wiping cloths, filter materials and protective clothing not otherwise specified - packaging - metallic).

14.) Transport information

Land transport ADR/RID

Class	3* 31 c
Remarks	Containers with a capacity <= 450 ltrs are subject only to the regulations of Rn. 2314 (remarks under E of Rn. 2301).

Marine transport IMDG/GGVSee

Class	3.3
Packaging group	III
UN number	1263
Proper shipping name	Paint related material
EmS	3-05
MFAG	330
MARPOL	---
Label	3

Air transport ICAO/IATA

Class	3
Packaging group	III
UN number	1263
Proper shipping name	Paint related material
Label	3

15.) Regulatory information

Hazard symbols

Xn Harmful

Hazardous component(s) to be indicated on label

TOLUENE-2,4-DI-ISOCYANATE (1), TOLUENE-2,6- DI-ISOCYANATE (2)

R phrases

10	Flammable.
20	Harmful by inhalation.
42	May cause sensitization by inhalation.

S phrases

20/21	When using do not eat, drink or smoke.
23.3	Do not breathe vapour.
29	Do not empty into drains.
51	Use only in well-ventilated areas.

Special labelling for certain preparations

Contains isocyanates. Observe manufacturer's instructions.

16.) Other information

Other information

According to their chemical structure, the applied raw materials do not contain any antimony, arsenic, soluble barium, lead, cadmium, chromium, mercury and selenium.

Department issuing safety data sheet

Laboratory/product safety.

Contact person

Dipl.-Chem. G. Heller or Dipl.-Ing. U. Voetter.

The instructions are based on today's information and knowledge. The safety data sheet describes products in relation to safety requirements. These instructions do not assure application technological properties of the product.

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