

1 Identification

- **Product identifier**
 - *Product number* LNB638
 - *Trade name:* **PU HARDENER**
 - *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**



GHS02 Flame

Flam. Liq. 2 H225 Highly flammable liquid and vapor.



GHS08 Health hazard

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Carc. 2 H351 Suspected of causing cancer.



GHS07

Acute Tox. 4 H332 Harmful if inhaled.

Eye Irrit. 2A H319 Causes serious eye irritation.

Skin Sens. 1 H317 May cause an allergic skin reaction.

STOT SE 3 H336 May cause drowsiness or dizziness.

- **Label elements**

- *GHS label elements*

The product is classified and labeled according to the Globally Harmonized System (GHS).

- *Hazard pictograms*



GHS02



GHS07



GHS08

- *Signal word* Danger

- *Hazard-determining components of labeling:*

Polyisocyanate HDI / TDI

n-butyl acetate

hexamethylene diisocyanate

m-tolyldiene diisocyanate

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· **Hazard statements**

H225 Highly flammable liquid and vapor.
H332 Harmful if inhaled.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
H351 Suspected of causing cancer.
H336 May cause drowsiness or dizziness.

· **Precautionary statements**

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P241 Use explosion-proof electrical/ventilating/lighting/equipment.
P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

· **Classification system:**

· **NFPA ratings (scale 0 - 4)**



· **HMIS-ratings (scale 0 - 4)**



3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Description:** Mixture: consisting of the following components.

· **Dangerous components:**

26426-91-5	Polyisocyanate HDI / TDI ⚠ Eye Irrit. 2A, H319; Skin Sens. 1, H317	30-49.9%
123-86-4	n-butyl acetate ⚠ Flam. Liq. 3, H226 ⚠ STOT SE 3, H336	25-<50%
540-88-5	tert-butyl acetate ⚠ Flam. Liq. 2, H225	20-24.9%
26471-62-5	m-tolylidene diisocyanate ⚠ Acute Tox. 2, H330 ⚠ Resp. Sens. 1, H334; Carc. 2, H351 ⚠ Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335 Aquatic Chronic 3, H412	0.1-<0.5%

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4 First-aid measures

- **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:**

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**

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:** Alcohol resistant foam, CO, powder, water spray/mist.

- **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**

Formation of toxic gases is possible during heating or in case of fire.

- **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 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).

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.

7 Handling and storage

· Handling:

· Precautions for safe handling

- Ensure good ventilation/exhaustion at the workplace.
- Open and handle receptacle with care.
- Prevent formation of aerosols.
- Protect against electrostatic charges.
- Keep respiratory protective device available.
- Use explosion-proof apparatus / fittings and spark-proof tools.

· Information about protection against explosions and fires:

- Keep ignition sources away - Do not smoke.
- Protect against electrostatic charges.
- Keep respiratory protective device available.

· Conditions for safe storage, including any incompatibilities

· Storage:

· Requirements to be met by storerooms and receptacles:

- Store in a cool, well-ventilated area, away from heat and sources of ignition
- Provide solvent resistant, sealed floor.
- 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.
- Store in cool, dry conditions in well sealed receptacles.

· 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 remaining constituent has no known exposure limits.

123-86-4 n-butyl acetate

PEL	Long-term value: 710 mg/m , 150 ppm
REL	Short-term value: 950 mg/m , 200 ppm
	Long-term value: 710 mg/m , 150 ppm
TLV	Short-term value: 712 mg/m , 150 ppm
	Long-term value: 238 mg/m , 50 ppm

540-88-5 tert-butyl acetate

PEL	Long-term value: 950 mg/m , 200 ppm
REL	Long-term value: 950 mg/m , 200 ppm
TLV	Short-term value: 712 mg/m , 150 ppm
	Long-term value: 238 mg/m , 50 ppm

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26471-62-5 m-tolylidene diisocyanate

PEL	Ceiling limit value: 0.14 mg/m , 0.02 ppm
REL	LFC
TLV	Short-term value: (0.14) NIC-0.021* mg/m , (0.02) NIC-0.003* ppm Long-term value: (0.036) NIC-0.007* mg/m , (0.005) NIC-0.001* ppm *(IFV) SEN; NIC-Skin; A3

· **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.
Store protective clothing separately.
Avoid contact with the eyes and skin.

· **Breathing equipment:**

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

· **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.

· **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.

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· <i>pH-value:</i>		Not determined.
· <i>Change in condition</i>		
· <i>Melting point/Melting range:</i>		Undetermined.
· <i>Boiling point/Boiling range:</i>		97 °C (207 °F)
· <i>Flash point:</i>		15 °C (59 °F)
· <i>Flammability (solid, gaseous):</i>		Not applicable.
· <i>Ignition temperature:</i>		370 °C (698 °F)
· <i>Decomposition temperature:</i>		Not determined.
· <i>Auto igniting:</i>		Product is not selfigniting.
· <i>Danger of explosion:</i>		Product is not explosive. However, formation of explosive air/vapor mixtures are possible.
· <i>Explosion limits:</i>		
· <i>Lower:</i>		1.2 Vol %
· <i>Upper:</i>		7.5 Vol %
· <i>Vapor pressure at 20 °C (68 °F):</i>		41 hPa (31 mm Hg)
· <i>Density at 20 °C (68 °F):</i>		1.049 g/cm (8.754 lbs/gal)
· <i>Relative density</i>		Not determined.
· <i>Vapor density</i>		Not determined.
· <i>Evaporation rate</i>		Not determined.
· <i>Solubility in / Miscibility with</i>		
· <i>Water:</i>		Not miscible or difficult to mix.
· <i>Partition coefficient (n-octanol/water):</i>		Not determined.
· <i>Viscosity:</i>		
· <i>Dynamic:</i>		Not determined.
· <i>Kinematic at 20 °C (68 °F):</i>		29 s (ISO 3 mm)
· <i>Oxidising properties:</i>		N.A.
· <i>Solvent content:</i>		
· <i>VOC content:</i>		30.4 % 318.8 g/l / 2.66 lb/gl
· <i>Solids content:</i>		44.7 %
· Other information (HAPS)		
26471-62-5	m-tolyldiene diisocyanate	0.1-<0.5%
822-06-0	hexamethylene diisocyanate	0.1-<0.5%
· 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** Vapours may form explosive mixtures with air

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- **Conditions to avoid** No further relevant information available.
- **Incompatible materials:** No further relevant information available.
- **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:

26426-91-5 Polyisocyanate HDI / TDI

Oral	LD50	5001 mg/kg (rat/szczur/mouse/souris/Maus/ratón)
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123-86-4 n-butyl acetate

Oral	LD50	10760 mg/kg (rat/szczur/mouse/souris/Maus/ratón)
Dermal	LD50	14000 mg/kg (rabbit/królik/Kaninchen/conejo/lapin)
Inhalative	LC50/4 h	21.1 mg/l (rat/szczur/mouse/souris/Maus/ratón)

540-88-5 tert-butyl acetate

Oral	LD50	4500 mg/kg (rat/szczur/mouse/souris/Maus/ratón)
Dermal	LD50	2001 mg/kg (Con)

26471-62-5 m-tolylidene diisocyanate

Oral	LD50	5110 mg/kg (rat/szczur/mouse/souris/Maus/ratón)
Dermal	LD50	9401 mg/kg (rabbit/królik/Kaninchen/conejo/lapin)
Inhalative	LC50/4 h	0.107 mg/l (rat/szczur/mouse/souris/Maus/ratón)

822-06-0 hexamethylene diisocyanate

Oral	LD50	738 mg/kg (rat/szczur/mouse/souris/Maus/ratón)
Dermal	LD50	593 mg/kg (rat/szczur/mouse/souris/Maus/ratón)
Inhalative	LC50/4 h	0.124 mg/l (rat/szczur/mouse/souris/Maus/ratón)

· Primary irritant effect:

- on the skin: No irritant effect.
- on the eye: Irritating effect.

· Sensitization:

- Sensitization possible through inhalation.
- Sensitization possible through skin contact.

· Additional toxicological information:

Harmful
Irritant

· Carcinogenic categories

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

26471-62-5	m-tolylidene diisocyanate	2B
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· NTP (National Toxicology Program)

26471-62-5	m-tolylidene diisocyanate	0.1-<0.5%
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· OSHA-Ca (Occupational Safety & Health Administration)

None of the ingredients is listed.

· Sensitisation

Toluene-diisocyanate (mixture of isomers)
Skin sensitization (LLNA - Local Lymph Node Assay): mouse
positive Result
Method OECD TG 429

Respiratory sensitization

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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

· Aquatic toxicity:

123-86-4 n-butyl acetate

EC50	648 mg/l (algae) (72 h)
	44 mg/l (daphnia) (48 h)
LC50 (96h)	18 mg/l (Fish)

540-88-5 tert-butyl acetate

EC50	350 mg/l (daphnia) (48 h)
LC50 (96h)	240 mg/l (Fish)

26471-62-5 m-tolylidene diisocyanate

EC50	12.5 mg/l (daphnia) (48h)
LC50 (96h)	133 mg/l (Leuciscus idus melanotus)

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.

· Additional ecological information:

· General notes:

Water hazard class 1 (Self-assessment): slightly hazardous for water

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

· **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.

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- **Uncleaned packagings:**
 - *Recommendation:* Disposal must be made according to official regulations.

14 Transport information

· UN-Number	
· DOT	NA1263
· IMDG, IATA	UN1263
· UN proper shipping name	
· DOT	Paint
· IMDG, IATA	PAINT
· Transport hazard class(es)	
· DOT	
	
· Class	3 Flammable liquids
· Label	3
· Class	3 Flammable liquids
· Label	3
· IMDG, IATA	
	
· Class	3 Flammable liquids
· Label	3
· Packing group	
· DOT, IMDG, IATA	II
· Environmental hazards:	
· Marine pollutant:	No
· Special precautions for user	
· Danger code (Kemler):	Warning: Flammable liquids 33
· EMS Number:	F-E, S-E
· Stowage Category	B
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	
Not applicable.	
· Transport/Additional information:	
· IMDG	
· Limited quantities (LQ)	5L
· Excepted quantities (EQ)	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml

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· **UN "Model Regulation":** UN 1263 PAINT, SPECIAL PROVISION 640D, 3, II

15 Regulatory information

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

Requirements of Federal Register

· SARA

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

None of the ingredients is listed.

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

26471-62-5	m-tolylidene diisocyanate	0.1-<0.5%
822-06-0	hexamethylene diisocyanate	0.1-<0.5%
75-65-0	2-methylpropan-2-ol	<0.1%

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

26471-62-5	m-tolylidene diisocyanate	*	0.1-<0.5%
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· **Chemicals known to cause reproductive toxicity for females:**

None of the ingredients is listed.

· **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 established by ACGIH)**

26471-62-5	m-tolylidene diisocyanate	(A4)
75-65-0	2-methylpropan-2-ol	A4

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

26471-62-5	m-tolylidene diisocyanate	0.1-<0.5%
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· **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

· **Contact:** See emergency phone

· **Date of preparation / last revision** 08/08/2016 / -

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· Abbreviations and acronyms:

IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 ACGIH: American Conference of Governmental Industrial Hygienists
 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
 Flam. Liq. 2: Flammable liquids . Category 2
 Flam. Liq. 3: Flammable liquids . Category 3
 Acute Tox. 2: Acute toxicity . Category 2
 Acute Tox. 4: Acute toxicity . Category 4
 Skin Irrit. 2: Skin corrosion/irritation . Category 2
 Eye Irrit. 2A: Serious eye damage/eye irritation . Category 2A
 Resp. Sens. 1: Respiratory sensitisation . Category 1
 Skin Sens. 1: Skin sensitisation . Category 1
 Carc. 2: Carcinogenicity . Category 2
 STOT SE 3: Specific target organ toxicity (single exposure) . Category 3
 Aquatic Chronic 3: Hazardous to the aquatic environment - long-term aquatic hazard . Category 3

· Sources

Directive 1999/45/EC and following amendments
 Directive 67/548/EEC and following amendments and adjustments
 Agency ECHA web site
 INRS Fiche Toxicologique
 IARC International agency for research on cancer