

**Safety data sheet
according to 1907/2006/EC, Article 31**

Printing date 06.03.2020

V- 1.0

Revision: 06.03.2020

**SECTION 1: Identification of the substance/mixture and of the company/
undertaking****1.1 Product identifier****Trade name: RADEX VRS1.1 Hardener, cietinātājs lakai****1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses: professional use.

Uses advised against: do-it-yourself

Application of the substance / the mixture Hardening agent/ Curing agent**1.3 Details of the supplier of the safety data sheet****Manufacturer/Supplier:**

RADEX-Europe Ltd.

Uriekstes iela 3, Riga

LV-1005, Latvia

Tel: +371 67387778

Fax: +371 67387789

info@radex-europe.lv

Further information obtainable from: info@radex-europe.lv**1.4 Emergency telephone number:** Tel: +371 67387778 (9:00 – 18:00)**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****Classification according to Regulation (EC) No 1272/2008**

GHS02

Flam. Liq. 3 H226

Flammable liquid and vapour.



GHS07

Acute Tox. 4 H332

Harmful if inhaled.

Skin Sens. 1 H317

May cause an allergic skin reaction.

STOT SE 3

H335-H336

May cause respiratory irritation. May cause drowsiness or dizziness.

2.2 Label elements**Labelling according to Regulation (EC) No 1272/2008**

The product is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS02 GHS07

Signal word Warning**Hazard-determining components of labelling:**

hexamethylene diisocyanate homopolymer

aliphatic polyisocyanate

n-butyl acetate

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isophorondiisocyanate homopolymer

Hazard statements

H226 Flammable liquid and vapour.

H332 Harmful if inhaled.

H317 May cause an allergic skin reaction.

H335-H336 May cause respiratory irritation. May cause drowsiness or dizziness.

Precautionary statementsP210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources.
No smoking.

P261 Avoid breathing mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves.

P333+P313 If skin irritation or rash occurs: Get medical advice/attention.

P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Additional information:

EUH066 Repeated exposure may cause skin dryness or cracking.

Contains isocyanates. May produce an allergic reaction.

2.3 Other hazards**Results of PBT and vPvB assessment****PBT:** Not applicable.**vPvB:** Not applicable.**SECTION 3: Composition/information on ingredients****3.2 Chemical characterisation: Mixtures****Description:** Mixture of substances listed below with nonhazardous additions.

Dangerous components:		
CAS: 28182-81-2 NLP: 500-060-2 Reg.nr.: 01-2119488934-20	hexamethylene diisocyanate homopolymer ⚠ Acute Tox. 4, H332; Skin Sens. 1, H317; STOT SE 3, H335	25-50%
CAS: 123-86-4 EINECS: 204-658-1 Reg.nr.: 01-2119485493-29	n-butyl acetate ⚠ Flam. Liq. 3, H226; ⚠ STOT SE 3, H336	25-50%
CAS: 164250-92-4	aliphatic polyisocyanate ⚠ Acute Tox. 4, H332; Skin Sens. 1, H317; STOT SE 3, H335	10-25%
CAS: 53880-05-0 NLP: 500-125-5 Reg.nr.: 01-2119980716-25	isophorondiisocyanate homopolymer ⚠ Acute Tox. 4, H332; Skin Sens. 1, H317; STOT SE 3, H335	2.5-10%

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:**

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

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Immediately remove any clothing soiled by the product.
In case of irregular breathing or respiratory arrest provide artificial respiration.
Take affected persons out of danger area and lay down.

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.
If skin irritation continues, consult a doctor.

After eye contact: Rinse opened eye for several minutes under running water.

After swallowing: Do not induce vomiting; call for medical help immediately.

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:**

CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

For safety reasons unsuitable extinguishing agents: Water with full jet

5.2 Special hazards arising from the substance or mixture

Can form explosive gas-air mixtures.
Formation of toxic gases is possible during heating or in case of fire.
Hydrogen cyanide (HCN)
Isocyanate vapors.
Carbon monoxide and carbon dioxide

5.3 Advice for firefighters**Protective equipment:**

Wear self-contained respiratory protective device.
Do not inhale explosion gases or combustion gases.

Additional information

Cool endangered receptacles with water spray.
Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
Collect contaminated fire fighting water separately. It must not enter the sewage system.

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

Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources.

6.2 Environmental precautions: Do not allow to enter sewers/ surface or ground water.

6.3 Methods and material for containment and cleaning up:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
Do not flush with water or aqueous cleansing agents.
Dispose of the material collected according to regulations.

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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
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7.1 Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.

Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).

Do not inhale gases / fumes / aerosols.

Do not eat, drink, smoke or sniff while working.

Do not allow to enter sewers/ surface or ground water.

Information about fire - and explosion protection:

Keep ignition sources away - Do not smoke.

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:**

Store only in the original receptacle.

Information about storage in one common storage facility:

Store away from foodstuffs.

Store away from oxidising agents.

Further information about storage conditions:

Store in cool, dry conditions in well sealed receptacles.

Store receptacle in a well ventilated area.

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

SECTION 8: Exposure controls/personal protection

Additional information about design of technical facilities: No further data; see item 7.**8.1 Control parameters****Ingredients with limit values that require monitoring at the workplace:****123-86-4 n-butyl acetate**

WEL (Great Britain)	Short-term value: 966 mg/m ³ , 200 ppm Long-term value: 724 mg/m ³ , 150 ppm
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Regulatory information WEL (Great Britain): EH40/2018**DNELs****28182-81-2 hexamethylene diisocyanate homopolymer**

Inhalative	DNEL	1 mg/m ³ (acute - local effects, workers) 0.5 mg/m ³ (long-term - local effects, workers)
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123-86-4 n-butyl acetate

Dermal	DNEL	7 mg/kg bw/day (long-term - systemic effects, workers)
Inhalative	DNEL	960 mg/m ³ (acute - systemic effects, workers) 960 mg/m ³ (acute - local effects, workers) 480 mg/m ³ (long-term - systemic effects, workers)

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		480 mg/m ³ (long-term - local effects, workers)
53880-05-0 isophorondiisocyanate homopolymer		
Inhalative	DNEL	0.29 mg/m ³ (acute - systemic effects, workers)
		0.58 mg/m ³ (acute - local effects, workers)
PNECs		
28182-81-2 hexamethylene diisocyanate homopolymer		
PNEC	0.199 mg/l (freshwater environment)	
	0.0199 mg/l (marine environment)	
	1.99 mg/l (intermittent releases)	
	100 mg/l (sewage treatment plants)	
PNEC	44,551 mg/kg (freshwater sediment environment)	
	4,455 mg/kg (marine sediment environment)	
	8,884 mg/kg (soil)	
123-86-4 n-butyl acetate		
PNEC	0.18 mg/l (freshwater environment)	
	0.018 mg/l (marine environment)	
	0.36 mg/l (intermittent releases)	
	35.6 mg/l (sewage treatment plants)	
PNEC	0.981 mg/kg (freshwater sediment environment)	
53880-05-0 isophorondiisocyanate homopolymer		
PNEC	0.0015 mg/l (freshwater environment)	
	0.00015 mg/l (marine environment)	
	0.015 mg/l (intermittent releases)	
	100 mg/l (sewage treatment plants)	

Additional information: The lists valid during the making were used as basis.**8.2 Exposure controls****Personal protective equipment:****General protective and hygienic measures:**

Ensure good ventilation/exhaustion at the workplace.

Ensure good interior ventilation, especially at floor level. (Fumes are heavier than air).

Keep ignition sources away - Do not smoke.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Do not inhale gases / fumes / aerosols.

Avoid contact with the eyes and skin.

Do not eat or drink while working.

Respiratory protection:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device.

Filter A2/P2

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Protection of hands:

Protective gloves

Check the permeability prior to each renewed use of the glove.

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 (EN 374).

Material of gloves

Butyl rubber, BR

Nitrile rubber, NBR

PVA gloves

Recommended thickness of the material: $\geq 0,7$ mm

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

Value for the permeation: Level 6 ≥ 480 min.

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

Body protection: Protective work clothing

SECTION 9: Physical and chemical properties
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9.1 Information on basic physical and chemical properties
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General Information

Appearance:

Form:	Fluid
Colour:	Colourless
Odour:	Characteristic
Odour threshold:	Not determined.

pH-value:	Not applicable.
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Change in condition

Melting point/freezing point:	Undetermined.
Initial boiling point and boiling range:	124 °C

Flash point:	>23 °C
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Flammability (solid, gas):	Not applicable.
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Decomposition temperature:	Not determined.
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Auto-ignition temperature:	Not determined.
Explosive properties:	Product is not explosive. However, formation of explosive air/vapour mixtures are possible.
Explosion limits:	
Lower:	1.2 Vol %
Upper:	15 Vol %
Vapour pressure at 20 °C:	10.7 hPa
Density at 20 °C:	1 g/cm ³
Vapour density	Not determined.
Evaporation rate	Not determined.
Solubility in / Miscibility with water:	Reacts with water.
Partition coefficient: n-octanol/water:	Not determined.
Viscosity:	
Dynamic:	Not determined.
Kinematic:	Not determined.
9.2 Other information	No further relevant information available.

SECTION 10: Stability and reactivity

10.1 Reactivity No decomposition if used according to specifications.

10.2 Chemical stability No decomposition if used and stored according to specifications.

10.3 Possibility of hazardous reactions

Reacts with water.

Reacts with alkali, amines and strong acids.

Reacts with oxidising agents.

Fumes can combine with air to form an explosive mixture.

10.4 Conditions to avoid Protect from heat and direct sunlight.

10.5 Incompatible materials: No further relevant information available.

10.6 Hazardous decomposition products:

Carbon monoxide and carbon dioxide

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Harmful if inhaled.

LD/LC50 values relevant for classification:

28182-81-2 hexamethylene diisocyanate homopolymer

Oral	LD50	>5,000 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rat)
Inhalative	ATE	1.5 mg/l

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123-86-4 n-butyl acetate		
Oral	LD50	10,760 mg/kg (rat)
Dermal	LD50	>14,000 mg/kg (rabbit)
Inhalative	LC50/4 h	23.4 mg/l (rat)
164250-92-4 aliphatic polyisocyanate		
Oral	LD50	>2,500 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rat)
Inhalative	LC50/4 h	11 mg/l (ATE)
53880-05-0 isophorondiisocyanate homopolymer		
Inhalative	LC50/4 h	4.1 mg/l (rat) (dust/ mist)

Primary irritant effect:**Skin corrosion/irritation** Based on available data, the classification criteria are not met.**Serious eye damage/irritation** Based on available data, the classification criteria are not met.**Respiratory or skin sensitisation**

May cause an allergic skin reaction.

CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)**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. May cause drowsiness or dizziness.

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.**SECTION 12: Ecological information****12.1 Toxicity****Aquatic toxicity:****28182-81-2 hexamethylene diisocyanate homopolymer**

LC50/96 h	>100 mg/l (fish)
EC50/3 h	>10,000 mg/l (microorganisms)
EC50/48 h	>100 mg/l (Daphnia magna)
EC50/72 h	199 mg/l (Scenedesmus subspicatus)

123-86-4 n-butyl acetate

LC50/96 h	18 mg/l (Pimephales promelas)
TT/16 h	115 mg/l (Pseudomonas putida)
EC50/48 h	44 mg/l (daphnia)
EC50/72 h	675 mg/l (algae)

164250-92-4 aliphatic polyisocyanate

LC50/96 h	>100 mg/l (fish)
EC50/48 h	>100 mg/l (Daphnia magna)
EC50/72 h	>1,000 mg/l (Scenedesmus subspicatus)
EC50	>1,000 mg/l (microorganisms)

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12.2 Persistence and degradability	
28182-81-2 hexamethylene diisocyanate homopolymer	
Biodegradation	2 % (not readily biodegradable)
123-86-4 n-butyl acetate	
Biodegradation	83 % (readily biodegradable) (OECD 301 D, 28 d, aerobic)
164250-92-4 aliphatic polyisocyanate	
Biodegradation	0 % (not readily biodegradable) (OECD 301 C, 28 d)
12.3 Bioaccumulative potential	
28182-81-2 hexamethylene diisocyanate homopolymer	
BCF	10.11 (-)
log Kow	8.38 (Kow)
123-86-4 n-butyl acetate	
BCF	15.3 (-)
log Pow	2.3
12.4 Mobility in soil	
123-86-4 n-butyl acetate	
log Koc	1.27

Additional ecological information:**General notes:**

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

12.5 Results of PBT and vPvB assessment**PBT:** Not applicable.**vPvB:** Not applicable.**12.6 Other adverse effects** No further relevant information available.**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.

European waste catalogue

08 01 11*	waste paint and varnish containing organic solvents or other hazardous substances
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Uncleaned packaging:**Recommendation:** Disposal must be made according to official regulations.**SECTION 14: Transport information****14.1 UN-Number****ADR, IMDG, IATA**

UN1263

14.2 UN proper shipping name**ADR**

1263 PAINT RELATED MATERIAL

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IMDG, IATA	PAINT RELATED MATERIAL
14.3 Transport hazard class(es)	
ADR, IMDG, IATA	
	
Class	3
Label	3
14.4 Packing group	
ADR, IMDG, IATA	III
14.5 Environmental hazards:	
Marine pollutant (IMDG):	Not applicable. No
14.6 Special precautions for user	
Hazard identification number (Kemler code):	Warning: Flammable liquids. 30
EMS Number:	F-E, <u>S-E</u>
Stowage Category	A
14.7 Transport in bulk according to Annex II of Marpol and the IBC Code	
	Not applicable.
Transport/Additional information:	
ADR	
Limited quantities (LQ)	5L
Transport category	3
Tunnel restriction code	D/E
IMDG	
Limited quantities (LQ)	5L
UN "Model Regulation":	UN 1263 PAINT RELATED MATERIAL, 3, III

SECTION 15: Regulatory information

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

Directive 2012/18/EU

Named dangerous substances - ANNEX I None of the ingredients is listed.

Seveso category P5c FLAMMABLE LIQUIDS

Qualifying quantity (tonnes) for the application of lower-tier requirements 5,000 t

Qualifying quantity (tonnes) for the application of upper-tier requirements 50,000 t

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

National regulations:

Information about limitation of use:

Employment restrictions concerning juveniles must be observed.

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Employment restrictions concerning pregnant and lactating women must be observed.

15.2 Chemical safety assessment: A Chemical Safety Assessment has not 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.

Relevant phrases

H226 Flammable liquid and vapour.

H317 May cause an allergic skin reaction.

H332 Harmful if inhaled.

H335 May cause respiratory irritation.

H336 May cause drowsiness or dizziness.

Classification according to Regulation (EC) No 1272/2008

Flammable liquids	Bridging principles
Acute toxicity - inhalation Skin sensitisation Specific target organ toxicity (single exposure)	The classification of the mixture is generally based on the calculation method using substance data according to Regulation (EC) No 1272/2008.

Abbreviations and acronyms:

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

Flam. Liq. 3: Flammable liquids – Category 3

Acute Tox. 4: Acute toxicity - inhalation – Category 4

Skin Sens. 1: Sensitisation - Skin. Hazard Category 1

STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

Sources European Chemicals Agency, <http://echa.europa.eu/>