

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

1. Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Hesse PU Hardener DR 4034

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

Use of the substance/preparation

Surface treatment of wood and other materials

Identified Uses

| | |
|--------|--|
| | REACHSET 1000 |
| SU3 | Industrial uses: Uses of substances as such or in preparations at industrial sites |
| ERC4 | Industrial use of processing aids in processes and products, not becoming part of articles |
| ERC5 | Industrial use resulting in inclusion into or onto a matrix |
| PROC7 | Industrial spraying |
| | REACHSET 2001 |
| SU22 | Professional uses: Public domain (administration, education, entertainment, services, craftsmen) |
| ERC8a | Wide dispersive indoor use of processing aids in open systems |
| ERC8c | Wide dispersive indoor use resulting in inclusion into or onto a matrix |
| PROC11 | Non industrial spraying |

1.3. Details of the supplier of the safety data sheet

Manufacturer

Hesse GmbH & Co. KG
 Warendorfer Strasse 21
 59075 Hamm (Germany)
 Telephone no. +49 (0) 2381 963-00
 Fax no. +49 (0) 2381 963-849
 E-mail address ps@hesse-lignal.de

1.4. Emergency telephone number

Germany: +49 (0) 2381 788-612

2. Hazards identification

2.1. Classification of the substance or mixture

Classification (Regulation (EC) No. 1272/2008)

| | | |
|--|---------------|------|
| Classification (Regulation (EC) No. 1272/2008) | | |
| | Flam. Liq. 3 | H226 |
| | Eye Irrit. 2 | H319 |
| | Resp. Sens. 1 | H334 |
| | Skin Sens. 1 | H317 |
| | STOT SE 3 | H336 |

The product is classified and labelled in accordance with Regulation (EC) No 1272/2008
 For explanation of abbreviations see section 16.

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

2.2. Label elements

Labelling according to regulation (EC) No 1272/2008

Hazard pictograms



Signal word

Danger

Hazard statements

| | |
|------|--|
| H226 | Flammable liquid and vapour. |
| H319 | Causes serious eye irritation. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H317 | May cause an allergic skin reaction. |
| H336 | May cause drowsiness or dizziness. |

Precautionary statements

| | |
|----------------|--|
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P261 | Avoid breathing dust/fume/gas/mist/vapours/spray. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P284 | [In case of inadequate ventilation] wear respiratory protection. |
| P304+P340 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P342+P311 | If experiencing respiratory symptoms: Call a POISON CENTER or doctor. |

Hazardous component(s) to be indicated on label (Regulation (EC) No. 1272/2008)

| | |
|----------|---|
| contains | m-Tolylidene diisocyanate; 4,4'-methylenediphenyl diisocyanate; polyisocyanate, aromatic; diphenylmethane-2,4'-diisocyanate |
|----------|---|

Supplemental information

| | |
|--------|---|
| EUH066 | Repeated exposure may cause skin dryness or cracking. |
| EUH204 | Contains isocyanates. May produce an allergic reaction. |

Labelling according to annex XVII to regulation (EU) No 1907/2006

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

2.3. Other hazards

This mixture contains no substance considered to be persistent, bioaccumulating nor toxic (PBT). This mixture contains no substance considered to be very persistent nor very bioaccumulating (vPvB) (if not listed in Section 3).

3. Composition/information on ingredients

Hazardous ingredients

n-butyl acetate

| | | | | | |
|------------------|------------------|---|----|---|--|
| CAS No. | 123-86-4 | | | | |
| EINECS no. | 204-658-1 | | | | |
| Registration no. | 01-2119485493-29 | | | | |
| Concentration | >= 25 | < | 50 | % | |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Classification (Regulation (EC) No. 1272/2008)

| | | |
|--------------|--------|----------------|
| Flam. Liq. 3 | H226 | |
| STOT SE 3 | H336 | Nervous system |
| | EUH066 | |

polyisocyanate, aromatic

Concentration >= 25 < 50 %

Classification (Regulation (EC) No. 1272/2008)

| | |
|--------------|------|
| Eye Irrit. 2 | H319 |
| Skin Sens. 1 | H317 |

polyisocyanate, aromatic

Concentration >= 1 < 9 %

Classification (Regulation (EC) No. 1272/2008)

| | | |
|--------------|------|--|
| Acute Tox. 4 | H332 | Route of exposure: Inhalation exposure |
|--------------|------|--|

| | |
|---------------|------|
| Skin Irrit. 2 | H315 |
| Eye Irrit. 2 | H319 |
| Resp. Sens. 1 | H334 |
| Skin Sens. 1 | H317 |
| STOT SE 3 | H335 |
| STOT RE 2 | H373 |

Respiratory tract
 Route of exposure: Inhalation exposure

m-Tolyldiene diisocyanate

CAS No. 26471-62-5

EINECS no. 247-722-4

Registration no. 01-2119454791-34

Concentration >= 0,1 < 1 %

Classification (Regulation (EC) No. 1272/2008)

| | |
|-------------------|------|
| Carc. 2 | H351 |
| Acute Tox. 2 | H330 |
| Eye Irrit. 2 | H319 |
| STOT SE 3 | H335 |
| Skin Irrit. 2 | H315 |
| Resp. Sens. 1 | H334 |
| Skin Sens. 1 | H317 |
| Aquatic Chronic 3 | H412 |

Respiratory tract

Concentration limits (Regulation (EC) No. 1272/2008)

Resp. Sens. 1 H334 >= 0,1 %

4,4'-methylenediphenyl diisocyanate

CAS No. 101-68-8

EINECS no. 202-966-0

Registration no. 01-2119457014-47

Concentration >= 0,1 < 1 %

Classification (Regulation (EC) No. 1272/2008)

| | |
|---------------|------|
| Acute Tox. 4 | H332 |
| Eye Irrit. 2 | H319 |
| STOT SE 3 | H335 |
| Skin Irrit. 2 | H315 |

Route of exposure: Inhalation exposure

Respiratory tract

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

| | |
|---------------|------|
| Resp. Sens. 1 | H334 |
| Skin Sens. 1 | H317 |
| Carc. 2 | H351 |
| STOT RE 2 | H373 |

Route of exposure: Inhalation exposure

Concentration limits (Regulation (EC) No. 1272/2008)

| | | |
|---------------|------|-------|
| Resp. Sens. 1 | H334 | 0,1 % |
| Eye Irrit. 2 | H319 | 5 % |
| Skin Irrit. 2 | H315 | 5 % |
| STOT SE 3 | H335 | 5 % |

Tosyl isocyanate

CAS No. 4083-64-1
 EINECS no. 223-810-8
 Registration no. 01-2119980050-47

Concentration \geq 0,1 < 1 %

Classification (Regulation (EC) No. 1272/2008)

| | |
|---------------|------|
| Eye Irrit. 2 | H319 |
| STOT SE 3 | H335 |
| Skin Irrit. 2 | H315 |
| Resp. Sens. 1 | H334 |

Respiratory tract

Concentration limits (Regulation (EC) No. 1272/2008)

| | | |
|---------------|------|---|
| Eye Irrit. 2 | H315 | 5 |
| STOT SE 3 | H335 | 5 |
| Skin Irrit. 2 | H315 | 5 |

diphenylmethane-2,4'-diisocyanate

CAS No. 5873-54-1
 EINECS no. 227-534-9
 Registration no. 01-2119480143-45

Concentration \geq 0,1 < 1 %

Classification (Regulation (EC) No. 1272/2008)

| | |
|---------------|------|
| Acute Tox. 4 | H332 |
| Skin Irrit. 2 | H315 |
| Eye Irrit. 2 | H319 |
| Resp. Sens. 1 | H334 |
| Skin Sens. 1 | H317 |
| Carc. 2 | H351 |
| STOT SE 3 | H335 |
| STOT RE 2 | H373 |

Route of exposure: Inhalation exposure

Respiratory tract
Route of exposure: Inhalation exposure

Concentration limits (Regulation (EC) No. 1272/2008)

| | | |
|---------------|------|--------------|
| Resp. Sens. 1 | H334 | \geq 0,1 % |
| Eye Irrit. 2 | H319 | \geq 5 % |
| Skin Irrit. 2 | H315 | \geq 5 % |
| STOT SE 3 | H335 | \geq 5 % |

Note

For explanation of abbreviations see section 16.

4. First aid measures

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

4.1. Description of first aid measures

General information

In all cases of doubt, or when symptoms persist, seek medical attention. If unconscious place in recovery position and seek medical advice. First aider: Pay attention to self-protection! Remove affected person from danger area, lay him down.

After inhalation

In case of accident by inhalation: remove casualty to fresh air and keep at rest. Keep warm, calm and covered up. In all cases of doubt, or when symptoms persist, seek medical attention.

After skin contact

Wash off immediately with soap and water. Do NOT use solvents or thinners. Consult a doctor if skin irritation persists.

After eye contact

Remove contact lenses, irrigate copiously with clean, fresh water, holding the eyelids apart for at least 10 minutes and seek immediate medical advice. Take medical treatment.

After ingestion

Do not induce vomiting. Take medical treatment.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms and signs include headache, dizziness, fatigue, muscular weakness, drowsiness and in extreme cases, loss of consciousness. Based on the properties of the isocyanate components and considering toxicological data on similar mixtures, this mixture may cause acute irritation and/or sensitisation of the respiratory system leading to an asthmatic condition, wheeziness and a tightness of the chest.

4.3. Indication of any immediate medical attention and special treatment needed

Hints for the physician / treatment

Treat symptomatically.

5. Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media

Recommended: alcohol resistant foam, CO₂, powders, water spray/mist

Non suitable extinguishing media

Do not use a solid water stream as it may scatter and spread fire.

5.2. Special hazards arising from the substance or mixture

Vapours can form an explosive mixture with air.

5.3. Advice for firefighters

Other information

Standard procedure for chemical fires.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Eliminate all ignition sources if safe to do so. Ensure adequate ventilation. Do not inhale vapours. Do not inhale gases. Do not inhale mist.

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

6.2. Environmental precautions

Do not allow to enter drains or waterways. Do not allow to enter soil, waterways or waste water canal. In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

6.3. Methods and material for containment and cleaning up

Contain and collect spillage with non-combustible absorbent materials, e.g. sand, earth, vermiculite, diatomaceous earth and place in container for disposal according to local regulations (see section 13). Clean contaminated floors and objects thoroughly with water and detergents, observing environmental regulations. Do NOT use solvents or thinners. Send in suitable containers for recovery or disposal.

6.4. Reference to other sections

Refer to protective measures listed in Sections 7 and 8.

7. Handling and storage

7.1. Precautions for safe 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 limits. Keep container tightly closed and dry in a cool, well-ventilated place. Use only with adequate ventilation/personal protection. Ensure adequate ventilation. Provide for sufficient ventilation. This can be achieved by local exhaust or general exhaust air collection. Wear a suitable respirator if the ventilation is not sufficient to keep the solvent vapour concentration below the occupational limit values. Persons with a history of asthma, allergies, chronic or recurrent respiratory disease should not be exposed to any process in which this mixture is used. Avoid contact with skin and eyes. Avoid inhalation of vapour and spray mist. Do not eat, drink or smoke when using this product. Use personal protective clothing. For personal protection see Section 8.

Advice on protection against fire and explosion

Vapours can form an explosive mixture with air. Vapours are heavier than air and may spread along floors. In addition, the product should only be used in areas from which all naked lights and other sources of ignition have been excluded. Mixture may charge electrostatically: always use earthing leads when transferring from one container to another. Take measures to prevent the build up of electrostatic charge. Wear shoes with conductive soles. No sparking tools should be used. Fight fire with normal precautions from a reasonable distance.

7.2. Conditions for safe storage, including any incompatibilities

Requirements for storage rooms and vessels

Provide solvent-resistant and impermeable floor. Keep only in the original container in a cool, well ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Hints on storage assembly

Keep away from oxidising agents, strongly alkaline and strongly acid materials, amines, alcohols and water.

Storage classes

Storage class according to TRGS 510 3 Flammable liquid

Further information on storage conditions

Protect from frost. Protect from heat and direct sunlight. Keep away from sources of ignition - No smoking. Store in accordance with the particular national regulations.

7.3. Specific end use(s)

See exposure scenario, if available.

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

8. Exposure controls/personal protection

8.1. Control parameters

Exposure limit values

n-butyl acetate

| | | | | |
|---------------------------|---------|-------------------|-----|--------|
| List | EH40 | | | |
| Value | 724 | mg/m ³ | 150 | ppm(V) |
| Short term exposure limit | 966 | mg/m ³ | 200 | ppm(V) |
| Status: | 01/2020 | | | |

n-butyl acetate

| | | | | |
|---------------------------|-----------------------|-------------------|-----|--------|
| List | Directive 2017/164 EG | | | |
| Value | 241 | mg/m ³ | 50 | ppm(V) |
| Short term exposure limit | 723 | mg/m ³ | 150 | ppm(V) |
| Status: | 10/2019 | | | |

Other information

-

Derived No/Minimal Effect Levels (DNEL/DMEL)

n-butyl acetate

| | | | |
|----------------------|--------------------------------|--|---------|
| Type of value | Derived No Effect Level (DNEL) | | |
| Reference group | Workers (professional) | | |
| Duration of exposure | Long-term | | |
| Route of exposure | Dermal exposure | | |
| Mode of action | Systemic effects | | |
| Concentration | 11 | | mg/kg/d |

| | | | |
|----------------------|--------------------------------|--|-------------------|
| Type of value | Derived No Effect Level (DNEL) | | |
| Reference group | Workers (professional) | | |
| Duration of exposure | Short-term | | |
| Route of exposure | inhalative | | |
| Mode of action | Systemic effects | | |
| Concentration | 600 | | mg/m ³ |

| | | | |
|----------------------|--------------------------------|--|-------------------|
| Type of value | Derived No Effect Level (DNEL) | | |
| Reference group | Workers (professional) | | |
| Duration of exposure | Short-term | | |
| Route of exposure | inhalative | | |
| Mode of action | Local effects | | |
| Concentration | 600 | | mg/m ³ |

| | | | |
|----------------------|--------------------------------|--|-------------------|
| Type of value | Derived No Effect Level (DNEL) | | |
| Reference group | Workers (professional) | | |
| Duration of exposure | Long-term | | |
| Route of exposure | inhalative | | |
| Mode of action | Local effects | | |
| Concentration | 300 | | mg/m ³ |

| | | | |
|----------------------|--------------------------------|--|--|
| Type of value | Derived No Effect Level (DNEL) | | |
| Reference group | Workers (professional) | | |
| Duration of exposure | Long-term | | |
| Route of exposure | inhalative | | |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

| | | |
|--|--------------------------------|-------------------|
| Mode of action | Systemic effects | |
| Concentration | 300 | mg/m ³ |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Consumer | |
| Duration of exposure | Long-term | |
| Route of exposure | Dermal exposure | |
| Mode of action | Systemic effects | |
| Concentration | 6 | mg/kg/d |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Consumer | |
| Duration of exposure | Long-term | |
| Route of exposure | Oral exposure | |
| Mode of action | Systemic effects | |
| Concentration | 2 | mg/kg/d |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Consumer | |
| Duration of exposure | Short-term | |
| Route of exposure | inhalative | |
| Mode of action | Systemic effects | |
| Concentration | 300 | mg/m ³ |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Consumer | |
| Duration of exposure | Short-term | |
| Route of exposure | inhalative | |
| Mode of action | Local effects | |
| Concentration | 300 | mg/m ³ |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Consumer | |
| Duration of exposure | Long-term | |
| Route of exposure | inhalative | |
| Mode of action | Systemic effects | |
| Concentration | 35,7 | mg/m ³ |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Consumer | |
| Duration of exposure | Long-term | |
| Route of exposure | inhalative | |
| Mode of action | Local effects | |
| Concentration | 35,7 | mg/m ³ |
| diphenylmethane-2,4'-diisocyanate | | |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Short-term | |
| Route of exposure | Dermal exposure | |
| Mode of action | Systemic effects | |
| Concentration | 50 | mg/kg |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

| | | |
|----------------------------------|--------------------------------|--------------------|
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Short-term | |
| Route of exposure | inhalative | |
| Mode of action | Systemic effects | |
| Concentration | 0,1 | mg/m ³ |
| | | |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Short-term | |
| Route of exposure | Dermal exposure | |
| Mode of action | Local effects | |
| Concentration | 28 | mg/cm ² |
| | | |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Short-term | |
| Route of exposure | inhalative | |
| Mode of action | Local effects | |
| Concentration | 0,1 | mg/m ³ |
| | | |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Long-term | |
| Route of exposure | inhalative | |
| Mode of action | Systemic effects | |
| Concentration | 0,05 | mg/m ³ |
| | | |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Long-term | |
| Route of exposure | inhalative | |
| Mode of action | Local effects | |
| Concentration | 0,05 | mg/m ³ |
| | | |
| m-Tolyldiene diisocyanate | | |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Short-term | |
| Route of exposure | inhalative | |
| Mode of action | Systemic effects | |
| Concentration | 0,14 | mg/m ³ |
| | | |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Short-term | |
| Route of exposure | inhalative | |
| Mode of action | Local effects | |
| Concentration | 0,14 | mg/m ³ |
| | | |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Long-term | |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

| | | |
|----------------------|--------------------------------|-------------------|
| Route of exposure | inhalative | |
| Mode of action | Systemic effects | |
| Concentration | 0,035 | mg/m ³ |
| Type of value | Derived No Effect Level (DNEL) | |
| Reference group | Workers (professional) | |
| Duration of exposure | Long-term | |
| Route of exposure | inhalative | |
| Mode of action | Local effects | |
| Concentration | 0,035 | mg/m ³ |

Predicted No Effect Concentration (PNEC)

n-butyl acetate

| | | |
|---------------|------------------------------|-------|
| Type of value | PNEC | |
| Type | Freshwater | |
| Concentration | 0,18 | mg/l |
| Type of value | PNEC | |
| Type | Saltwater | |
| Concentration | 0,018 | mg/l |
| Type of value | PNEC | |
| Type | Sewage treatment plant (STP) | |
| Concentration | 35,6 | mg/l |
| Type of value | PNEC | |
| Type | Water | |
| Conditions | sporadic release | |
| Concentration | 0,36 | mg/l |
| Type of value | PNEC | |
| Type | Fresh water sediment | |
| Concentration | 0,981 | mg/kg |
| Type of value | PNEC | |
| Type | saltwater sediment | |
| Concentration | 0,0981 | mg/l |
| Type of value | PNEC | |
| Type | Soil | |
| Concentration | 0,0903 | mg/kg |

diphenylmethane-2,4'-diisocyanate

| | | |
|---------------|--------------|------|
| Type of value | PNEC | |
| Type | Freshwater | |
| Concentration | > 1 | mg/l |
| Type of value | PNEC | |
| Type | marine water | |
| Concentration | > 0,1 | mg/l |
| Type of value | PNEC | |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

| | | | |
|---------------|------|---|-------|
| Type | Soil | | |
| Concentration | > | 1 | mg/kg |

| | | | |
|---------------|------------------------------|---|------|
| Type of value | PNEC | | |
| Type | Sewage treatment plant (STP) | | |
| Concentration | > | 1 | mg/l |

m-Tolylidene diisocyanate

| | | | |
|---------------|------------|-------|------|
| Type of value | PNEC | | |
| Type | Freshwater | | |
| Concentration | | 0,013 | mg/l |

| | | | |
|---------------|-----------|---------|------|
| Type of value | PNEC | | |
| Type | Saltwater | | |
| Concentration | | 0,00125 | mg/l |

| | | | |
|---------------|------|---|-------|
| Type of value | PNEC | | |
| Type | Soil | | |
| Concentration | > | 1 | mg/kg |

| | | | |
|---------------|------------------------------|---|-------|
| Type of value | PNEC | | |
| Type | Sewage treatment plant (STP) | | |
| Concentration | > | 1 | mg/kg |

8.2. Exposure controls**Exposure controls**

Users are advised to consider national Occupational Exposure Limits or other equivalent values. Provide for sufficient ventilation. This can be achieved by local exhaust or general exhaust air collection. Wear a suitable respirator if the ventilation is not sufficient to keep the solvent vapour concentration below the occupational limit values.

Respiratory protection

Avoid inhalation of vapour and spray mist. Use breathing apparatus if exposed to vapours/dust/aerosol. Recommended Filter type: Respiratory protection mask with combination filter A/P2

Hand protection

Protective gloves complying with EN 374.

Glove material

Multilayer gloves made from

Appropriate Material Fluorinated rubber / butyl-rubber

Material thickness \geq 0,7 mm

Breakthrough time \geq 30 min

This recommendation is valid only for the product named in this safety data sheet supplied by us, and only for the indicated intended use purposes.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed.

The breakthrough time must be greater than the end use time of the product.

Gloves should be replaced regularly and if there is any sign of damage to the glove material.

The performance or effectiveness of the glove may be reduced by physical/ chemical damage and poor maintenance.

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Eye protection

Wear eye glasses with side protection according to EN 166.

Body protection

Wear suitable protective clothing. Remove contaminated clothing and wash it before reuse. Wash hands before breaks and after work.

9. Physical and chemical properties**9.1. Information on basic physical and chemical properties**

| | |
|---|-----------------|
| Form | liquid |
| Colour | colourless |
| Odour | solvent-like |
| Odour threshold | |
| Remarks | not determined |
| Melting point | |
| Remarks | not determined |
| Freezing point | |
| Remarks | not determined |
| Initial boiling point and boiling range | |
| Value | 124 to 128 °C |
| Flash point | |
| Value | 26 °C |
| Evaporation rate | |
| Remarks | not determined |
| Flammability (solid, gas) | |
| | not determined |
| Upper/lower flammability or explosive limits | |
| Remarks | not determined |
| Vapour pressure | |
| Remarks | not determined |
| Vapour density | |
| Remarks | not determined |
| Density | |
| Value | appr. 1,02 kg/l |
| Temperature | 20 °C |
| Solubility in water | |
| Remarks | not determined |
| Solubility(ies) | |
| Remarks | not determined |
| Partition coefficient: n-octanol/water | |
| Remarks | not determined |
| Ignition temperature | |
| Remarks | not determined |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Decomposition temperature

Remarks not determined

Viscosity

Remarks not determined

Efflux time

| | | | | |
|-------------|------------------------|----|----|---|
| Value | 60 | to | 60 | s |
| Temperature | 20 | °C | | |
| Method | DIN EN ISO 2431 - 3 mm | | | |

Explosive properties

evaluation not determined

Oxidising properties

Remarks not determined

9.2. Other information**Non-volatile content**

| | | |
|--------|------------------|---|
| Value | 50,5 | % |
| Method | calculated value | |

Other information

This information is not available.

10. Stability and reactivity**10.1. Reactivity**

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

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

To avoid thermal decomposition, do not overheat.

10.4. Conditions to avoid

Isolate from sources of heat, sparks and open flame.

10.5. Incompatible materials

Keep away from oxidising agents, strongly alkaline and strongly acid materials in order to avoid exothermic reactions. Uncontrolled exothermic reactions occur with amines and alcohols. The product reacts slowly with water resulting in evolution of carbon dioxide. Gaseous decomposition products cause pressure to build up in tightly sealed vessels. Precautions should be taken to minimise exposure to atmospheric humidity or water: CO₂ will be formed which in closed containers can result in pressurisation.

10.6. Hazardous decomposition products

Carbon monoxide and carbon dioxide, nitrous oxides (NO_x), dense black smoke, hydrocyanic acid, Stable under recommended storage and handling conditions (see section 7).

11. Toxicological information**11.1. Information on toxicological effects****Acute oral toxicity**

Method Calculation method (Regulation (EC) No. 1272/2008)

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

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

Acute dermal toxicity

Method Calculation method (Regulation (EC) No. 1272/2008)
 Remarks Based on available data, the classification criteria are not met.

Acute inhalational toxicity

ATE 7,9444 mg/l
 Administration/Form Dust/Mist
 Method calculated value (Regulation (EC) No. 1272/2008)
 Remarks Based on available data, the classification criteria are not met.

Acute inhalative toxicity (Components)**polyisocyanate, aromatic**

ATE 1,5 mg/l
 Duration of exposure 4 h
 Administration/Form Dust/Mist
 Method conversion value

m-Tolylidene diisocyanate

Species rat
 LC50 0,101 mg/l
 Duration of exposure 4 h
 Administration/Form Dust/Mist

4,4'-methylenediphenyl diisocyanate

ATE 1,1 mg/l
 Duration of exposure 4 h
 Administration/Form Dust/Mist
 Remarks Mist

diphenylmethane-2,4'-diisocyanate

ATE 1,5 mg/l
 Duration of exposure 4 h
 Administration/Form Dust/Mist
 Method conversion value

Skin corrosion/irritation

Method Calculation method (Regulation (EC) No. 1272/2008)
 Remarks Based on available data, the classification criteria are not met.

Skin corrosion/irritation (Components)**Tosyl isocyanate**

Species rabbit
 evaluation Irritating to skin.

m-Tolylidene diisocyanate

evaluation Irritating to skin.

4,4'-methylenediphenyl diisocyanate

Species rabbit
 evaluation Mild skin irritation

polyisocyanate, aromatic

evaluation Irritating to skin.

diphenylmethane-2,4'-diisocyanate

Species rabbit
 evaluation Irritating to skin.

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Serious eye damage/irritation

| | |
|------------|--|
| evaluation | irritant |
| Method | Calculation method (Regulation (EC) No. 1272/2008) |
| Remarks | The classification criteria are met. |

Serious eye damage/irritation (Components)**Tosyl isocyanate**

| | |
|------------|---------------------|
| Species | rabbit |
| evaluation | Irritating to eyes. |

m-Tolylidene diisocyanate

| | |
|------------|---------------------|
| evaluation | Irritating to eyes. |
|------------|---------------------|

4,4'-methylenediphenyl diisocyanate

| | |
|------------|---------------------|
| evaluation | Irritating to eyes. |
|------------|---------------------|

polyisocyanate, aromatic

| | |
|------------|---------------------|
| evaluation | Irritating to eyes. |
|------------|---------------------|

diphenylmethane-2,4'-diisocyanate

| | |
|------------|---------------------|
| evaluation | Irritating to eyes. |
|------------|---------------------|

Sensitization

| | |
|------------|--|
| evaluation | May cause sensitization by inhalation. |
| Method | Calculation method (Regulation (EC) No. 1272/2008) |
| Remarks | The classification criteria are met. |

Sensitization (Components)**m-Tolylidene diisocyanate**

| | |
|------------|--|
| Species | mouse |
| evaluation | May cause sensitization by skin contact. |

m-Tolylidene diisocyanate

| | |
|-------------------|--|
| Route of exposure | inhalative |
| Species | guinea pig |
| evaluation | May cause sensitization by inhalation. |

polyisocyanate, aromatic

| | |
|------------|--|
| Species | guinea pig |
| evaluation | May cause sensitization by skin contact. |

polyisocyanate, aromatic

| | |
|------------|--|
| Species | guinea pig |
| evaluation | May cause sensitization by inhalation. |

polyisocyanate, aromatic

| | |
|------------|--|
| Species | guinea pig |
| evaluation | May cause sensitization by skin contact. |

Tosyl isocyanate

| | |
|------------|--|
| evaluation | May cause sensitization by inhalation. |
|------------|--|

4,4'-methylenediphenyl diisocyanate

| | |
|------------|--|
| Species | guinea pig |
| evaluation | May cause sensitization by inhalation. |
| Method | OECD Test Guideline 406 |

4,4'-methylenediphenyl diisocyanate

| | |
|------------|--|
| Species | mouse |
| evaluation | May cause sensitization by skin contact. |

diphenylmethane-2,4'-diisocyanate

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

evaluation May cause sensitization by skin contact.

diphenylmethane-2,4'-diisocyanate

Species guinea pig

evaluation May cause sensitization by inhalation.

Mutagenicity

Method Calculation method (Regulation (EC) No. 1272/2008)

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

Mutagenicity (Components)**polyisocyanate, aromatic**

evaluation Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

m-Tolylidene diisocyanate

Species Salmonella typhimurium

evaluation Not mutagenic in Ames Test.

Reproductive toxicity

Method Calculation method (Regulation (EC) No. 1272/2008)

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

Reproduction toxicity (Components)**m-Tolylidene diisocyanate**

Route of exposure inhalative

Species rat

Dose 0,5 ppm(m)

Duration of exposure 21 d

evaluation No toxicity to reproduction

Remarks NOAEL

Carcinogenicity

Method Calculation method (Regulation (EC) No. 1272/2008)

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

Carcinogenicity (Components)**m-Tolylidene diisocyanate**

evaluation Suspected of causing cancer.

4,4'-methylenediphenyl diisocyanate

evaluation Carcinogenic Category 2

diphenylmethane-2,4'-diisocyanate

Route of exposure inhalative

Species rat

Dose < 6 mg/m³

Duration of exposure 2 y

evaluation Carcinogenic Category 2

Specific Target Organ Toxicity (STOT)**Single exposure**

Method Calculation method (Regulation (EC) No. 1272/2008)

Remarks The classification criteria are met.

evaluation May cause drowsiness or dizziness.

Repeated exposure

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

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Specific Target Organ Toxicity (STOT) (Components)**n-butyl acetate****Specific target organ toxicity - repeated exposure**

Organs: Nervous system

Remarks

Possible narcotic effects (drowsiness, dizziness).

Tosyl isocyanate**Specific target organ toxicity - single exposure**

Remarks

May cause respiratory irritation.

4,4'-methylenediphenyl diisocyanate**Specific target organ toxicity - single exposure**

Route of exposure inhalative

Organs: Respiratory tract

Remarks

May cause respiratory irritation.

4,4'-methylenediphenyl diisocyanate**Specific target organ toxicity - repeated exposure**

evaluation

Causes damage to organs through prolonged or repeated exposure

Route of exposure inhalative

polyisocyanate, aromatic**Specific target organ toxicity - single exposure**

evaluation

May cause respiratory irritation.

Route of exposure inhalative

Organs: Respiratory tract

polyisocyanate, aromatic**Specific target organ toxicity - repeated exposure**

evaluation

May cause damage to organs through prolonged or repeated exposure

diphenylmethane-2,4'-diisocyanate

Route of exposure inhalative

Organs: Respiratory tract

Remarks

May cause respiratory irritation.

diphenylmethane-2,4'-diisocyanate

Route of exposure inhalative

Organs: Respiratory tract

Remarks

Can cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

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

Other information

No toxicological data are available.

12. Ecological information**12.1. Toxicity****General information**

For this subsection there is no ecotoxicological data available on the product as such.

Fish toxicity (Components)**4,4'-methylenediphenyl diisocyanate**

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

| | | |
|----------------------|--------------------------|------|
| Species | Danio rerio (zebra fish) | |
| LC50 | >= 10000 | mg/l |
| Duration of exposure | 96 h | |
| Method | OECD 203 | |

diphenylmethane-2,4'-diisocyanate

| | | |
|----------------------|--------------------------|------|
| Species | Danio rerio (zebra fish) | |
| LC50 | > 1000 | mg/l |
| Duration of exposure | 96 h | |
| Method | OECD 203 | |

Daphnia toxicity (Components)**polyisocyanate, aromatic**

| | | |
|----------------------|----------------------------|------|
| Species | Daphnia magna (Water flea) | |
| EC50 | > 100 | mg/l |
| Duration of exposure | 48 h | |

m-Tolylidene diisocyanate

| | | |
|----------------------|----------------------------|------|
| Species | Daphnia magna (Water flea) | |
| EC50 | 12,5 | mg/l |
| Duration of exposure | 48 h | |
| Method | OECD Test Guideline 202 | |

4,4'-methylenediphenyl diisocyanate

| | | |
|----------------------|----------------------------|------|
| Species | Daphnia magna (Water flea) | |
| EC50 | > 1000 | mg/l |
| Duration of exposure | 24 h | |
| Method | OECD 202, part 1, static | |

diphenylmethane-2,4'-diisocyanate

| | | |
|----------------------|----------------------------|------|
| Species | Daphnia magna (Water flea) | |
| EC50 | > 1000 | mg/l |
| Duration of exposure | 24 h | |
| Method | OECD 202, part 1, static | |

diphenylmethane-2,4'-diisocyanate

| | | |
|---------|----------------------------|------|
| Species | Daphnia magna (Water flea) | |
| NOEC | > 10 | mg/l |
| Method | OECD 202, part 1, static | |

Algae toxicity (Components)**diphenylmethane-2,4'-diisocyanate**

| | | |
|----------------------|-------------------------|------|
| Species | Scenedesmus subspicatus | |
| EC50 | > 1640 | mg/l |
| Duration of exposure | 72 h | |
| Method | OECD 201 | |

Bacteria toxicity (Components)**polyisocyanate, aromatic**

| | | |
|---------|------------------|------|
| Species | activated sludge | |
| EC50 | > 10000 | mg/l |

polyisocyanate, aromatic

| | | |
|---------|------------------|------|
| Species | activated sludge | |
| EC50 | > 10000 | mg/l |

4,4'-methylenediphenyl diisocyanate

| | | |
|---------|------------------|------|
| Species | activated sludge | |
| EC50 | > 100 | mg/l |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

| | | | |
|--|------------------|---|------|
| Duration of exposure | 3 | h | |
| diphenylmethane-2,4'-diisocyanate | | | |
| Species | activated sludge | | |
| EC50 | > 100 | | mg/l |
| Duration of exposure | 3 | h | |

12.2. Persistence and degradability

General information

For this subsection there is no ecotoxicological data available on the product as such.

Biodegradability (Components)

m-Tolylidene diisocyanate

| | | | |
|-----------------------------|-----|---|---|
| Value | 0,0 | | % |
| Duration of test evaluation | 28 | d | |
| Not readily biodegradable. | | | |

4,4'-methylenediphenyl diisocyanate

| | | | |
|------------------|-----|---|---|
| Value | 0,0 | | % |
| Duration of test | 28 | d | |

12.3. Bioaccumulative potential

General information

For this subsection there is no ecotoxicological data available on the product as such.

Partition coefficient: n-octanol/water

Remarks not determined

12.4. Mobility in soil

General information

For this subsection there is no ecotoxicological data available on the product as such.

Mobility in soil

no data available

12.5. Results of PBT and vPvB assessment

General information

For this subsection there is no ecotoxicological data available on the product as such.

12.6. Other adverse effects

General information

For this subsection there is no ecotoxicological data available on the product as such.

General information / ecology

For this subsection there is no ecotoxicological data available on the product as such.

13. Disposal considerations

13.1. Waste treatment methods

Disposal recommendations for the product

| | |
|----------------|--|
| EWC waste code | 080111 - waste paint and varnish containing organic solvents or other dangerous substances |
| EWC waste code | 200127 - paint, inks, adhesives and resins containing dangerous substances |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Where possible recycling is preferred to disposal or incineration.
Do not allow to enter drains or waterways.

modified product

EWC waste code 080115 - aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances
EWC waste code 080113 - sludges from paint or varnish containing organic solvents or other dangerous substances

Dried residues




EWC waste code 080112 - waste lacquers and waste paint except those falling under 080111

Disposal recommendations for packaging

EWC waste code 150110 - packaging containing residues of or contaminated by dangerous substances

Completely emptied packagings can be given for recycling.

14. Transport information

| | Land transport ADR/RID | Marine transport IMDG/GGVSee | Air transport ICAO/IATA |
|----------------------------------|---|--|---|
| Tunnel restriction code | D/E | | |
| 14.1. UN number | 1263 | 1263 | 1263 |
| 14.2. UN proper shipping name | PAINT | PAINT | PAINT |
| 14.3. Transport hazard class(es) | 3 | 3 | 3 |
| Label |  |  |  |
| 14.4. Packing group | III | III | III |
| Limited Quantity | 5 l | | |
| Transport category | 3 | | |

15. Regulatory information

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

VOC

VOC (EU) 49,5 % 505 g/l

Restriction according to annex XVII to regulation (EU) No 1907/2006

74. Diisocyanates. Shall not be used as substances on their own, as a constituent in other substances or

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

in mixtures for industrial and professional use(s) after 24 August 2023, unless: the employer or self-employed ensures that industrial or professional user(s) have successfully completed training on the safe use of diisocyanates prior to the use of the substance(s) or mixture(s).

Other information

All components are contained in the PICCS inventory.

15.2. Chemical safety assessment

For this substance / mixture a chemical safety assessment was not carried out.

16. Other information**Training advice according to annex XVII to regulation (EU) No 1907/2006**

74. Diisocyanates. The employer or self-employed shall document the successful completion of the training referred to in paragraphs 4 and 5. The training shall be renewed at least every five years.

Hazard statements listed in Chapter 3

| | |
|--------|--|
| EUH066 | Repeated exposure may cause skin dryness or cracking. |
| H226 | Flammable liquid and vapour. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H319 | Causes serious eye irritation. |
| H330 | Fatal if inhaled. |
| H332 | Harmful if inhaled. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| H336 | May cause drowsiness or dizziness. |
| H351 | Suspected of causing cancer. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H412 | Harmful to aquatic life with long lasting effects. |

CLP categories listed in Chapter 3

| | |
|-------------------|--|
| Acute Tox. 2 | Acute toxicity, Category 2 |
| Acute Tox. 4 | Acute toxicity, Category 4 |
| Aquatic Chronic 3 | Hazardous to the aquatic environment, chronic, Category 3 |
| Carc. 2 | Carcinogenicity, Category 2 |
| Eye Irrit. 2 | Eye irritation, Category 2 |
| Flam. Liq. 3 | Flammable liquid, Category 3 |
| Resp. Sens. 1 | Respiratory sensitization, Category 1 |
| Skin Irrit. 2 | Skin irritation, Category 2 |
| Skin Sens. 1 | Skin sensitization, Category 1 |
| STOT RE 2 | Specific target organ toxicity - repeated exposure, Category 2 |
| STOT SE 3 | Specific target organ toxicity - single exposure, Category 3 |

Abbreviations

ADR - Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 RID - Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
 IMDG - International Maritime Code for Dangerous Goods
 IATA - International Air Transport Association
 IATA-DGR - Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
 ICAO-TI - Technical Instructions by the "International Civil Aviation Organization" (ICAO)
 GHS - Globally Harmonized System of Classification and Labelling of Chemicals
 EINECS - European Inventory of Existing Commercial Chemical Substances

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

CAS - Chemical Abstracts Service (division of the American Chemical Society)
 GefStoffV - Gefahrstoffverordnung (Ordinance on Hazardous Substances, Germany)

LOAEL - Lowest Observed Adverse Effect Level

LOEL - Lowest Observed Effect Level

NOAEL - No Observed Adverse Effect Level

NOEC - No Observed Effect Concentration

NOEL - No Observed Effect Level

OECD - Organisation for Economic Cooperation and Development

VOC - Volatile Organic Compounds

Changes since the last version are highlighted in the margin (***). This version replaces all previous versions.

This safety datasheet only contains information relating to safety and does not replace any product information or product specification.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification.

The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

The information contained herein is based on the present state of our knowledge and does therefore not guarantee certain properties.

Annex to the extended Safety Data Sheet (eSDS)

Short title of the exposure scenario

ES001 - Industrial applications: industrial spraying (inside)

Use of the substance/preparation

Surface treatment of wood and other materials

Use

| | |
|-------|--|
| SU3 | Industrial uses: Uses of substances as such or in preparations at industrial sites |
| ERC4 | Industrial use of processing aids in processes and products, not becoming part of articles |
| ERC5 | Industrial use resulting in inclusion into or onto a matrix |
| PROC7 | Industrial spraying |

Contributing exposure scenario controlling environmental exposure

Use

| | |
|------|--|
| ERC4 | Industrial use of processing aids in processes and products, not becoming part of articles |
| ERC5 | Industrial use resulting in inclusion into or onto a matrix |

Physical form

liquid

Maximum amount used per time or activity

Emission days per site: <= 300

Other relevant operational conditions

Use: Room temperature

Drying and through-curing takes place at ambient temperature or at higher temperatures.

Where possible recycling is preferred to disposal or incineration.

Do not allow to enter soil, waterways or waste water canal.

Dispose of rinse water in accordance with local and national regulations.

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Waste water

Do not discharge into the drains/surface waters/groundwater. Spray cabin waters are to be conducted after mechanical pretreatment into a wastewater treatment facility.

Exhaust air

Keep container closed. Avoid release to the environment.

Soil

Floors should be impervious, resistant to liquids and easy to clean.

Disposal recommendations for the product

| | |
|----------------|--|
| EWC waste code | 080111 - waste paint and varnish containing organic solvents or other dangerous substances |
| | 200127 - paint, inks, adhesives and resins containing dangerous substances |

Where possible recycling is preferred to disposal or incineration.
Do not allow to enter drains or waterways.

modified product

| | |
|----------------|--|
| EWC waste code | 080115 - aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances |
| | 080113 - sludges from paint or varnish containing organic solvents or other dangerous substances |

Dried residues

| | |
|----------------|---|
| EWC waste code | 080112 - waste lacquers and waste paint except those falling under 080111 |
|----------------|---|

Disposal recommendations for packaging

| | |
|----------------|---|
| EWC waste code | 150110 - packaging containing residues of or contaminated by dangerous substances |
|----------------|---|

Completely emptied packagings can be given for recycling.

Contributing exposure scenario controlling worker exposure

Use

| | |
|-------|--|
| SU3 | Industrial uses: Uses of substances as such or in preparations at industrial sites |
| PROC7 | Industrial spraying |

Physical form

liquid

Maximum amount used per time or activity

| | | | |
|-----------------------|----|-----|-----|
| Duration of exposure | <= | 8 | h/d |
| Frequency of exposure | <= | 220 | d/a |

Other relevant operational conditions

Use: Room temperature
Drying and through-curing takes place at ambient temperature or at higher temperatures.
Read attached instructions before use.

Product substance and product safety related measures

Mainly used in closed systems. Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Provide for sufficient ventilation. This can be achieved by local exhaust or general exhaust air collection. Wear a suitable respirator if the ventilation is not sufficient to keep the solvent vapour concentration below the occupational limit values.

Respiratory protection

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Avoid inhalation of vapour and spray mist. Use breathing apparatus if exposed to vapours/dust/aerosol.
 Recommended Filter type: Respiratory protection mask with combination filter A/P2

Hand protection

Protective gloves complying with EN 374.

Glove material

Multilayer gloves made from

Appropriate Material Fluorinated rubber / butyl-rubber

Material thickness \geq 0,7

Breakthrough time \geq 30

This recommendation is valid only for the product named in this safety data sheet supplied by us, and only for the indicated intended use purposes.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed.

The breakthrough time must be greater than the end use time of the product.

Gloves should be replaced regularly and if there is any sign of damage to the glove material.

The performance or effectiveness of the glove may be reduced by physical/ chemical damage and poor maintenance.

Eye protection

Wear eye glasses with side protection according to EN 166.

Body protection

Wear suitable protective clothing. Remove contaminated clothing and wash it before reuse. Wash hands before breaks and after work.

Exposure estimation and reference to its source

Workers (industrial)

| | |
|-----------------------------------|-------------------------------------|
| PROC | PROC7 |
| Assessment method | Short-term |
| | Inhalation exposure |
| Exposure assessment | 0,022 mg/m ³ |
| Exposure assessment (method) | qualitative assessment |
| Risk characterisation ratio (RCR) | < 1 |
| Lead substance | 4,4'-methylenediphenyl diisocyanate |

Workers (industrial)

| | |
|-----------------------------------|-------------------------------------|
| PROC | PROC10 |
| Assessment method | Short-term |
| | Inhalation exposure |
| Exposure assessment | 0,034 mg/m ³ |
| Exposure assessment (method) | qualitative assessment |
| Risk characterisation ratio (RCR) | < 1 |
| Lead substance | 4,4'-methylenediphenyl diisocyanate |

Workers (industrial)

| | |
|-----------------------------------|-------------------------------------|
| PROC | PROC13 |
| Assessment method | Short-term |
| | Inhalation exposure |
| Exposure assessment | 0,034 mg/m ³ |
| Exposure assessment (method) | qualitative assessment |
| Risk characterisation ratio (RCR) | < 1 |
| Lead substance | 4,4'-methylenediphenyl diisocyanate |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Workers (industrial)

| | |
|-----------------------------------|-------------------------------------|
| PROC | PROC7 |
| Assessment method | Long-term |
| Exposure assessment | Inhalation exposure |
| Exposure assessment (method) | 0,010 mg/m ³ |
| Risk characterisation ratio (RCR) | qualitative assessment |
| Lead substance | < 1 |
| | 4,4'-methylenediphenyl diisocyanate |

Workers (industrial)

| | |
|-----------------------------------|-------------------------------------|
| PROC | PROC10 |
| Assessment method | Long-term |
| Exposure assessment | Inhalation exposure |
| Exposure assessment (method) | 0,017 mg/m ³ |
| Risk characterisation ratio (RCR) | qualitative assessment |
| Lead substance | < 1 |
| | 4,4'-methylenediphenyl diisocyanate |

Workers (industrial)

| | |
|-----------------------------------|-------------------------------------|
| PROC | PROC13 |
| Assessment method | Long-term |
| Exposure assessment | Inhalation exposure |
| Exposure assessment (method) | 0,017 mg/m ³ |
| Risk characterisation ratio (RCR) | qualitative assessment |
| Lead substance | < 1 |
| | 4,4'-methylenediphenyl diisocyanate |

Information on estimated exposure and downstream-user guidance**Guidance for Downstream Users**

The downstream user can evaluate whether he operates within the conditions set in the exposure scenario on the basis of the information supplied. This evaluation can be conducted by an expert or using the risk assessment tools recommended by ECHA.

Annex to the extended Safety Data Sheet (eSDS)**Short title of the exposure scenario**

ES003 - Professional uses: Non industrial spraying (inside)

Use of the substance/preparation

Surface treatment of wood and other materials

Use

| | |
|--------|--|
| SU22 | Professional uses: Public domain (administration, education, entertainment, services, craftsmen) |
| ERC8a | Wide dispersive indoor use of processing aids in open systems |
| ERC8c | Wide dispersive indoor use resulting in inclusion into or onto a matrix |
| PROC11 | Non industrial spraying |

Contributing exposure scenario controlling environmental exposure**Use**

| | |
|-------|---|
| ERC8a | Wide dispersive indoor use of processing aids in open systems |
| ERC8c | Wide dispersive indoor use resulting in inclusion into or onto a matrix |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Physical form liquid

Maximum amount used per time or activity

Emission days per site: <= 250

Other relevant operational conditions

Use: Room temperature
Drying and through-curing takes place at ambient temperature or at higher temperatures.
Volatile organic substances will volatilise into the atmospheric air inside.
Where possible recycling is preferred to disposal or incineration.
Do not allow to enter soil, waterways or waste water canal.
Dispose of rinse water in accordance with local and national regulations.

Waste water

Do not discharge into the drains/surface waters/groundwater. Spray cabin waters are to be conducted after mechanical pretreatment into a wastewater treatment facility.

Exhaust air

Keep container closed. Avoid release to the environment.

Soil

Floors should be impervious, resistant to liquids and easy to clean.

Disposal recommendations for the product

EWC waste code 080111 - waste paint and varnish containing organic solvents or other dangerous substances
200127 - paint, inks, adhesives and resins containing dangerous substances

Where possible recycling is preferred to disposal or incineration.
Do not allow to enter drains or waterways.

modified product

EWC waste code 080115 - aqueous sludges containing paint or varnish containing organic solvents or other dangerous substances
080113 - sludges from paint or varnish containing organic solvents or other dangerous substances

Dried residues

EWC waste code 080112 - waste lacquers and waste paint except those falling under 080111

Disposal recommendations for packaging

EWC waste code 150110 - packaging containing residues of or contaminated by dangerous substances

Completely emptied packagings can be given for recycling.

Contributing exposure scenario controlling worker exposure (professional)

Short title of the exposure scenario

Substance number:CES006

Use

SU22 Professional uses: Public domain (administration, education, entertainment, services, craftsmen)

PROC11 Non industrial spraying

Physical form liquid

Maximum amount used per time or activity

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

| | | | |
|-----------------------|----|-----|-----|
| Duration of exposure | <= | 8 | h/d |
| Frequency of exposure | <= | 220 | d/a |

Other relevant operational conditions

Use: Room temperature

Drying and through-curing takes place at ambient temperature or at higher temperatures.

Volatile organic substances will volatilise into the atmospheric air inside.

Read attached instructions before use.

Product substance and product safety related measures

Apply technical measures to comply with the occupational exposure limits. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Provide for sufficient ventilation. This can be achieved by local exhaust or general exhaust air collection. Wear a suitable respirator if the ventilation is not sufficient to keep the solvent vapour concentration below the occupational limit values.

Respiratory protection

Avoid inhalation of vapour and spray mist. Use breathing apparatus if exposed to vapours/dust/aerosol.

Recommended Filter type: Respiratory protection mask with combination filter A/P2

Hand protection

Protective gloves complying with EN 374.

Glove material

Multilayer gloves made from

Appropriate Material Fluorinated rubber / butyl-rubber

Material thickness >= 0,7

Breakthrough time >= 30

This recommendation is valid only for the product named in this safety data sheet supplied by us, and only for the indicated intended use purposes.

For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

The instructions and information provided by the glove manufacturer on use, storage, maintenance and replacement must be followed.

The breakthrough time must be greater than the end use time of the product.

Gloves should be replaced regularly and if there is any sign of damage to the glove material.

The performance or effectiveness of the glove may be reduced by physical/ chemical damage and poor maintenance.

Eye protection

Wear eye glasses with side protection according to EN 166.

Body protection

Wear suitable protective clothing. Remove contaminated clothing and wash it before reuse. Wash hands before breaks and after work.

Exposure estimation and reference to its source**Workers (professional)**

| | |
|-----------------------------------|-------------------------------------|
| SU | SU22 |
| PROC | PROC10 |
| Assessment method | Short-term inhalative |
| Exposure assessment | 0,034 mg/m ³ |
| Exposure assessment (method) | qualitative assessment |
| Risk characterisation ratio (RCR) | < 1 |
| Lead substance | 4,4'-methylenediphenyl diisocyanate |

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

Print date: 19.02.22

Workers (professional)

| | |
|-----------------------------------|-------------------------------------|
| SU | SU22 |
| PROC | PROC11 |
| Assessment method | Short-term inhalative |
| Exposure assessment | 0,07 mg/m ³ |
| Exposure assessment (method) | qualitative assessment |
| Risk characterisation ratio (RCR) | < 1 |
| Lead substance | 4,4'-methylenediphenyl diisocyanate |

Workers (professional)

| | |
|-----------------------------------|-------------------------------------|
| SU | SU22 |
| PROC | PROC13 |
| Assessment method | Short-term inhalative |
| Exposure assessment | 0,035 mg/m ³ |
| Exposure assessment (method) | qualitative assessment |
| Risk characterisation ratio (RCR) | < 1 |
| Lead substance | 4,4'-methylenediphenyl diisocyanate |

Workers (professional)

| | |
|-----------------------------------|-------------------------------------|
| SU | SU22 |
| PROC | PROC13 |
| Assessment method | Long-term inhalative |
| Exposure assessment | 0,017 mg/m ³ |
| Exposure assessment (method) | qualitative assessment |
| Risk characterisation ratio (RCR) | < 1 |
| Lead substance | 4,4'-methylenediphenyl diisocyanate |

Workers (professional)

| | |
|-----------------------------------|-------------------------------------|
| SU | SU22 |
| PROC | PROC11 |
| Assessment method | Long-term inhalative |
| Exposure assessment | 0,035 mg/m ³ |
| Exposure assessment (method) | qualitative assessment |
| Risk characterisation ratio (RCR) | < 1 |
| Lead substance | 4,4'-methylenediphenyl diisocyanate |

Workers (professional)

| | |
|-----------------------------------|-------------------------------------|
| SU | SU22 |
| PROC | PROC13 |
| Assessment method | Long-term inhalative |
| Exposure assessment | 0,017 mg/m ³ |
| Exposure assessment (method) | qualitative assessment |
| Risk characterisation ratio (RCR) | < 1 |
| Lead substance | 4,4'-methylenediphenyl diisocyanate |

Information on estimated exposure and downstream-user guidance**Guidance for Downstream Users**

The downstream user can evaluate whether he operates within the conditions set in the exposure

Trade name: Hesse PU Hardener DR 4034

Version: 10 / GB

Revision: 15.12.2021

Replaces Version: 9 / GB

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scenario on the basis of the information supplied. This evaluation can be conducted by an expert or using the risk assessment tools recommended by ECHA.