Safety Data Sheet
Hempel's 174DE

Conforms to Regulation (EC) No. 1907/2006 (REACH), Annex II, as amended by Regulation (EU) No. 2020/878 - Austria / Germany

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

1.1 Product identifier

Product name : Hempel's 174DE

Product identity : 174DE19840, 00137C7C

Product type : polyurethane primer

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

Field of application : metal industry, ships and shipyards.

Identified uses : Industrial applications, Used by spraying.

1.3 Details of the supplier of the safety data sheet

Company details :

Hempel (Germany) GmbH
Haderslebener Straße 9
25421 Pinneberg
Tel. (0 41 01) 70 70
Fax. (0 41 01) 70 71 31
hempel@hempel.com

1.4 Emergency telephone number

(0 41 01) 70 70 (08.00 - 17.00)
Austria: Vergiftungsinformationszentrale
+43 1 406 43 43 (24 hrs)
Switzerland: Swiss Toxicological Information Centre
+41 44 251 51 51 (in Switzerland dial 145) (24 hrs)

Date of issue : 6 March 2025

Date of previous issue : 28 February 2024.

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Product definition : Mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Flam. Liq. 3, H226	FLAMMABLE LIQUIDS
Resp. Sens. 1, H334	RESPIRATORY SENSITIZATION
Skin Sens. 1, H317	SKIN SENSITIZATION
Carc. 2, H351	CARCINOGENICITY
STOT SE 3, H335	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation)
Aquatic Acute 1, H400	AQUATIC HAZARD (ACUTE)
Aquatic Chronic 1, H410	AQUATIC HAZARD (LONG-TERM)

See Section 11 for more detailed information on health effects and symptoms.

2.2 Label elements

Hazard pictograms :

Signal word : Danger

Hazard statements :

H226 - Flammable liquid and vapor.
H317 - May cause an allergic skin reaction.
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H335 - May cause respiratory irritation.
H351 - Suspected of causing cancer.
H410 - Very toxic to aquatic life with long lasting effects.

Precautionary statements :

Prevention : Wear protective gloves, protective clothing, eye protection, face protection, or hearing protection. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Avoid release to the environment. Avoid breathing vapor.

Response : Collect spillage. IF INHALED: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: Call a POISON CENTER or doctor.

SECTION 2: Hazards identification

Hazardous ingredients : Solvent naphtha (petroleum), light arom.
Isocyanic acid, polymethylenepolyphenylene ester, polymer with 1,2-ethanediamine, 2-methyloxirane and 1,2-propanediol
diphenylmethane-diisocyanate (isomers and homologues)
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol
prepolymer based on aromatic polyisocyanate
Methylstyrenated phenol
4-isocyanatosulphonyltoluene
benzene, 1,1'-methylenebis[4-isocyanato-
o-(p-isocyanatobenzyl)phenyl isocyanate
4-methyl-m-phenylene diisocyanate

Supplemental label elements : Contains isocyanates. May produce an allergic reaction. **As from August 24 2023 adequate training is required before industrial or professional use.**

Special packaging requirements

Containers to be fitted with child-resistant fastenings : Not applicable.

Tactile warning of danger : Not applicable.

2.3 Other hazards

See Section 15 for details. EU - Substances of very high concern - vPvB

Other hazards which do not result in classification : None known.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Product/ingredient name	Identifiers	%	Regulation (EC) No. 1272/2008 [CLP]		Type
zinc powder - zinc dust (stabilized)	REACH #: 01-2119467174-37 EC: 231-175-3 CAS: 7440-66-6	≥50 - ≤75	Aquatic Acute 1, H400 Aquatic Chronic 1, H410	M [Acute] = 1 M [Chronic] = 10	[1]
Solvent naphtha (petroleum), light arom.	REACH #: 01-2119455851-35 EC: 918-668-5 CAS: 128601-23-0	≥5 - ≤10	Flam. Liq. 3, H226 STOT SE 3, H335 STOT SE 3, H336 Asp. Tox. 1, H304 Aquatic Chronic 2, H411 EUH066	-	[1]
2-methoxy-1-methylethyl acetate	REACH #: 01-2119475791-29 EC: 203-603-9 CAS: 108-65-6	≥3 - ≤5	Flam. Liq. 3, H226 STOT SE 3, H336	-	[1] [2]
Isocyanic acid, polymethylenepolyphenylene ester, polymer with 1,2-ethanediamine, 2-methyloxirane and 1,2-propanediol	CAS: 67815-87-6	≥1 - ≤3.5	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 STOT SE 3, H335 STOT RE 2, H373 (inhalation)	ATE [Inhalation (vapours)] = 11 mg/l	[1]
zinc oxide	REACH #: 01-2119463881-32 EC: 215-222-5 CAS: 1314-13-2 Index: 030-013-00-7	≥3 - ≤5	Aquatic Acute 1, H400 Aquatic Chronic 1, H410	M [Acute] = 1 M [Chronic] = 1	[1]
diphenylmethane-diisocyanate (isomers and homologues)	CAS: 9016-87-9 List #: 618-498-9	≥1 - ≤2.1	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 (respiratory tract) (inhalation)	ATE [Inhalation (vapours)] = 11 mg/l Skin Irrit. 2, H315: C ≥ 5% Eye Irrit. 2, H319: C ≥ 5% Resp. Sens. 1, H334: C ≥ 0.1% STOT SE 3, H335: C ≥ 5%	[1]
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	REACH #: 01-2119884131-42 CAS: 147993-65-5 List #: 700-674-2	≥1 - ≤3	Acute Tox. 4, H332 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 (inhalation) STOT SE 3, H335 STOT RE 2, H373	ATE [Inhalation (dusts and mists)] = 1.5 mg/l	[1]

SECTION 3: Composition/information on ingredients

			(inhalation) Aquatic Chronic 2, H411		
prepolymer based on aromatic polyisocyanate	CAS: 127821-00-5	≥1 - ≤2	Eye Irrit. 2, H319 Skin Sens. 1, H317	-	[1]
Methylstyrenated phenol	REACH #: 01-2119555274-38 EC: 270-966-8 CAS: 68512-30-1	≤1.1	Skin Irrit. 2, H315 Skin Sens. 1B, H317 Aquatic Chronic 3, H412	-	[1] [3]
4-isocyanatosulphonyltoluene	REACH #: 01-2119980050-47 EC: 223-810-8 CAS: 4083-64-1 Index: 615-012-00-7	<1	Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 STOT SE 3, H335 EUH014	Skin Irrit. 2, H315: C ≥ 5% Eye Irrit. 2, H319: C ≥ 5% STOT SE 3, H335: C ≥ 5%	[1]
benzene, 1,1'-methylenebis [4-isocyanato-	REACH #: 01-2119457014-47 EC: 202-966-0 CAS: 101-68-8 Index: 615-005-00-9	≤0.3	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 (inhalation) STOT SE 3, H335 STOT RE 2, H373 (respiratory tract) (inhalation)	ATE [Inhalation (dusts and mists)] = 1.5 mg/l Skin Irrit. 2, H315: C ≥ 5% Eye Irrit. 2, H319: C ≥ 5% Resp. Sens. 1, H334: C ≥ 0.1% STOT SE 3, H335: C ≥ 5%	[1]
o-(p-isocyanatobenzyl)phenyl isocyanate	REACH #: 01-2119480143-45 EC: 227-534-9 CAS: 5873-54-1 Index: 615-005-00-9	≤0.3	Acute Tox. 4, H332 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 (inhalation) STOT SE 3, H335 STOT RE 2, H373 (respiratory system) (inhalation)	ATE [Inhalation (dusts and mists)] = 1.5 mg/l Skin Irrit. 2, H315: C ≥ 5% Eye Irrit. 2, H319: C ≥ 5% Resp. Sens. 1, H334: C ≥ 0.1% STOT SE 3, H335: C ≥ 5%	[1]
4-methyl-m-phenylene diisocyanate	REACH #: 01-2119486974-18 EC: 209-544-5 CAS: 584-84-9	<0.1	Acute Tox. 1, H330 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Resp. Sens. 1, H334 Skin Sens. 1, H317 Carc. 2, H351 STOT SE 3, H335 Aquatic Chronic 3, H412	ATE [Inhalation (gases)] = 14 ppm Resp. Sens. 1, H334: C ≥ 0.1%	[1]
			See Section 16 for the full text of the H statements declared above.		

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

Type

[1] Substance classified with a health or environmental hazard
[2] Substance with a workplace exposure limit, see section 8.
[3] Substance meets the criteria for vPvB according to Regulation (EC) No. 1907/2006, Annex XIII

List numbers have no legal significance.

SECTION 4: First aid measures

4.1 Description of first aid measures

General : In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

If breathing is irregular, drowsiness, loss of consciousness or cramps: Call 112 and give immediate treatment (first aid).

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Seek immediate medical attention/advice.

Inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. Give nothing by mouth. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. If unconscious, place in recovery position and get medical attention immediately.

Skin contact : Wash skin thoroughly with soap and water or use recognized skin cleanser. Do NOT use solvents or thinners. Remove contaminated clothing and shoes.

Ingestion : If swallowed, seek medical advice immediately and show this container or label. Keep person warm and at rest. Do not induce vomiting unless directed to do so by medical personnel. Lower the head so that vomit will not re-enter the mouth and throat.

SECTION 4: First aid measures

Protection of first-aiders :	No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

4.2 Most important symptoms and effects, both acute and delayed

Potential acute health effects

Eye contact :	No known significant effects or critical hazards.
Inhalation :	May cause respiratory irritation. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin contact :	May cause an allergic skin reaction.
Ingestion :	No known significant effects or critical hazards.

Over-exposure signs/symptoms

Eye contact :	No specific data.
Inhalation :	Adverse symptoms may include the following: respiratory tract irritation coughing wheezing and breathing difficulties asthma
Skin contact :	Adverse symptoms may include the following: irritation redness
Ingestion :	No specific data.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to physician :	If gasses have been inhaled, from the decomposition of the product, symptoms may be delayed. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
Specific treatments :	No specific treatment.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Extinguishing media :	Recommended: Approved Class D extinguisher or smother with dry sand, dry clay or dry ground limestone. NOT TO BE USED: WATER. Risk of formation of very flammable and explosive vapours.

5.2 Special hazards arising from the substance or mixture

Hazards from the substance or mixture :	Flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. This material is very toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.
Hazardous combustion products :	Decomposition products may include the following materials: carbon oxides nitrogen oxides metal oxide/ oxides

5.3 Advice for firefighters

Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Fire will produce dense black smoke. Exposure to decomposition products may cause a health hazard. Cool closed containers exposed to fire with water. Do not release runoff from fire to drains or watercourses. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Do not use water. Violent reaction may occur. Avoid all direct contact with the spilled material. Exclude sources of ignition and be aware of explosion hazard. Ventilate the area. Avoid breathing vapor or mist. Refer to protective measures listed in sections 7 and 8. No action shall be taken involving any personal risk or without suitable training. If the product contaminates lakes, rivers, or sewers, inform the appropriate authorities in accordance with local regulations.

6.2 Environmental precautions

Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

6.3 Methods and materials for containment and cleaning up

Stop leak if without risk. Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Use spark-proof tools and explosion-proof equipment. Contaminated absorbent material may pose the same hazard as the spilled product.

6.4 Reference to other sections

See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Vapors are heavier than air and may spread along floors. Vapors may form explosive mixtures with air. Prevent the creation of flammable or explosive concentrations of vapors in air and avoid vapor concentrations higher than the occupational exposure limits. In addition, the product should be used only in areas from which all naked lights and other sources of ignition have been excluded. Electrical equipment should be protected to the appropriate standard. To dissipate static electricity during transfer, ground drum and connect to receiving container with bonding strap. No sparking tools should be used. Contains isocyanates. Exposure to isocyanate may result in acute irritation and/or sensitisation when breathing. Open with care, danger of overpressure.
Care should be taken when re-opening partly-used containers.

Avoid inhalation of vapour, dust and spray mist. Avoid contact with skin and eyes. Eating, drinking and smoking should be prohibited in area where this material is handled, stored and processed. Appropriate personal protective equipment: see Section 8. Always keep in containers made from the same material as the original one.

7.2 Conditions for safe storage, including any incompatibilities

Store in accordance with local regulations. Store in a cool, well-ventilated area away from incompatible materials and ignition sources. Keep out of the reach of children. Keep away from: Oxidizing agents, strong alkalis, strong acids as well as of amines, alcohols and water. No smoking. Prevent unauthorized access. Containers that are opened must be carefully resealed and kept upright to prevent leakage.

7.3 Specific end use(s)

See separate Product Data Sheet for recommendations or industrial sector specific solutions.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Product/ingredient name	Exposure limit values
2-methoxy-1-methylethyl acetate	**TRGS 900 OEL (Germany, 6/2024)** TWA 8 hours: 270 mg/m³. PEAK 15 minutes: 270 mg/m³. TWA 8 hours: 50 ppm. PEAK 15 minutes: 50 ppm. **DFG MAC-values list (Germany, 7/2023)** Develop C. TWA 8 hours: 50 ppm. PEAK 15 minutes: 50 ppm 4 times per shift [Interval: 1 hour]. TWA 8 hours: 270 mg/m³. PEAK 15 minutes: 270 mg/m³ 4 times per shift [Interval: 1 hour]. **EU OEL (Europe, 1/2022)** Absorbed through skin. TWA 8 hours: 50 ppm. TWA 8 hours: 275 mg/m³.

SECTION 8: Exposure controls/personal protection

	STEL 15 minutes: 100 ppm. STEL 15 minutes: 550 mg/m³.
diphenylmethane-diisocyanate (isomers and homologues)	**TRGS 900 OEL (Germany, 6/2024)** Absorbed through skin , Inhalation sensitizer , Skin sensitizer. TWA 8 hours: 0.05 mg/m³ (calculated as MDI). Form: inhalable fraction. PEAK 15 minutes: 0.05 mg/m³ (calculated as MDI). Form: inhalable fraction. CEIL: 0.1 mg/m³ (calculated as MDI). Form: inhalable fraction. **DFG MAC-values list (Germany, 7/2023)** Carc 4, Develop C. Absorbed through skin , Inhalation sensitizer , Skin sensitizer. TWA 8 hours: 0.05 mg/m³. Form: inhalable fraction. PEAK 15 minutes: 0.05 mg/m³ 4 times per shift [Interval: 1 hour]. Form: inhalable fraction. CEIL: 0.1 mg/m³.
2-methoxy-1-methylethyl acetate	**Regulation on Limit Values - MAC (Austria, 4/2021)** Absorbed through skin. TWA 8 hours: 50 ppm. TWA 8 hours: 275 mg/m³. CEIL 5 minutes: 100 ppm 8 times per shift. CEIL 5 minutes: 550 mg/m³ 8 times per shift. **EU OEL (Europe, 1/2022)** Absorbed through skin. TWA 8 hours: 50 ppm. TWA 8 hours: 275 mg/m³. STEL 15 minutes: 100 ppm. STEL 15 minutes: 550 mg/m³.

Biological exposure indices

Product/ingredient name	Exposure limit values
benzene, 1,1'-methylenebis[4-isocyanato-	**DFG BEI-values list (Germany, 7/2023)** Notes: danger from percutaneous absorption (see p. 211 and p. 228). BGV: 10 µg/l, 4,4'-diaminodiphenylmethane (after hydrolysis) [in urine]. Form: inhalable fraction. Sampling time: end of exposure or end of shift.
4-methyl-m-phenylene diisocyanate	**DFG BEI-values list (Germany, 7/2023)** BEI: See Section XV.2: For the following substances currently no BAR may be derived, but there is documentation in the "Occupational medicine and toxicology Justifications for BAT values, EKA, BLW, and BAR", toluene-2,4-diamine (after hydrolysis) [in urine]. Sampling time: end of exposure or end of shift. BEI: 5 µg/g creatinine, sum of 2,4- and 2,6-TDA (after hydrolysis) [in urine]. Sampling time: end of exposure or end of shift.
Isocyanic acid, polymethylenepolyphenylene ester, polymer with 1,2-ethanediamine, 2-methyloxirane and 1,2-propanediol	**VGU BEI (Austria, 9/2020) [isocyanate]** BEI Fitness: 10 µg/g Kreatinin, 4,4'-diaminodiphenylmethane [in urine]. Sampling time: one year.
diphenylmethane-diisocyanate (isomers and homologues)	**VGU BEI (Austria, 9/2020) [isocyanate]** BEI Fitness: 10 µg/g Kreatinin, 4,4'-diaminodiphenylmethane [in urine]. Sampling time: one year.
4-isocyanatosulphonyltoluene	**VGU BEI (Austria, 9/2020) [isocyanate]** BEI Fitness: 10 µg/g Kreatinin, 4,4'-diaminodiphenylmethane [in urine]. Sampling time: one year.
benzene, 1,1'-methylenebis[4-isocyanato-	**VGU BEI (Austria, 9/2020) [isocyanate]** BEI Fitness: 10 µg/g Kreatinin, 4,4'-diaminodiphenylmethane [in urine]. Sampling time: one year.
o-(p-isocyanatobenzyl)phenyl isocyanate	**VGU BEI (Austria, 9/2020) [isocyanate]** BEI Fitness: 10 µg/g Kreatinin, 4,4'-diaminodiphenylmethane [in urine]. Sampling time: one year.
4-methyl-m-phenylene diisocyanate	**VGU BEI (Austria, 9/2020) [isocyanate]** BEI Fitness: 10 µg/g Kreatinin, 4,4'-diaminodiphenylmethane [in urine]. Sampling time: one year.

Recommended monitoring procedures

Reference should be made to monitoring standards, such as the following: European Standard EN 689 (Workplace atmospheres - Guidance for the assessment of exposure by inhalation to chemical agents for comparison with limit values and measurement strategy) European Standard EN 14042 (Workplace atmospheres - Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents) European Standard EN 482 (Workplace atmospheres - General requirements for the performance of procedures for the measurement of chemical agents) Reference to national guidance documents for methods for the determination of hazardous substances will also be required.

Derived effect levels

SECTION 8: Exposure controls/personal protection

Product/ingredient name	Type - Population - Exposure	Value	Effects
zinc powder - zinc dust (stabilized)	DNEL - Workers - Long term - Dermal	83.3 mg/kg bw/day	Effects: Systemic
	DNEL - Workers - Long term - Inhalation	5 mg/m³	Effects: Systemic
Solvent naphtha (petroleum), light arom.	DNEL - Workers - Long term - Dermal	12.5 mg/kg bw/day	Effects: Systemic
	DNEL - Workers - Long term - Inhalation	1.9 mg/m³	Effects: Systemic
2-methoxy-1-methylethyl acetate	DNEL - Workers - Long term - Dermal	796 mg/kg	Effects: Systemic
	DNEL - Workers - Long term - Inhalation	275 mg/m³	Effects: Systemic
zinc oxide	DNEL - Workers - Long term - Inhalation	5 mg/m³	Effects: Systemic
	DNEL - Workers - Long term - Dermal	83 mg/kg bw/day	Effects: Systemic
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	DNEL - Workers - Long term - Inhalation	0.05 mg/m³	Effects: Systemic
Methylstyrenated phenol	DNEL - Workers - Long term - Dermal	3.5 mg/kg bw/day	Effects: Systemic
	DNEL - Workers - Long term - Inhalation	1.4 mg/m³	Effects: Systemic
benzene, 1,1'-methylenebis[4-isocyanato-o-(p-isocyanatobenzyl)phenyl isocyanate	DNEL - Workers - Long term - Inhalation	0.05 mg/m³	Effects: Systemic
	DNEL - Workers - Long term - Inhalation	0.05 mg/m³	Effects: Systemic
4-methyl-m-phenylene diisocyanate	DNEL - Workers - Long term - Inhalation	0.035 mg/m³	Effects: Systemic

Predicted effect concentrations

Product/ingredient name	Compartment Detail	Value
zinc powder - zinc dust (stabilized)	Fresh water	20.6 µg/l
	Marine	6.1 µg/l
	Sewage Treatment Plant	52 µg/l
	Fresh water sediment	118 mg/kg dwt
	Marine water sediment	56.5 mg/kg dwt
	Soil	35.6 mg/kg dwt
zinc oxide	Fresh water	20.6 µg/l
	Marine	6.1 µg/l
	Sewage Treatment Plant	52 µg/l
	Marine water sediment	56.5 mg/kg dwt
	Soil	35.6 mg/kg dwt
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	Fresh water	0.002 mg/l
	Marine	0.0002 mg/l
	Soil	67 mg/kg dwt
	Sewage Treatment Plant	100 mg/l
Methylstyrenated phenol	Sewage Treatment Plant	2.4 mg/l
	Fresh water	14 µg/l
	Marine	1.4 µg/l
	Fresh water sediment	1064 mg/kg dwt
	Marine water sediment	106 mg/kg dwt
	Soil	212 mg/kg dwt
benzene, 1,1'-methylenebis[4-isocyanato-	Fresh water	1 mg/l
	Marine	0.1 mg/l
	Soil	1 mg/kg dwt
	Sewage Treatment Plant	1 mg/l
o-(p-isocyanatobenzyl)phenyl isocyanate	Fresh water	1 mg/l
	Marine	0.1 mg/l
	Soil	1 mg/kg dwt
	Sewage Treatment Plant	1 mg/l
4-methyl-m-phenylene diisocyanate	Fresh water	0.013 mg/l
	Marine water	0.00125 mg/l
	Soil	>1 mg/kg dwt
	Sewage Treatment Plant	>1 mg/l

8.2 Exposure controls

Appropriate engineering controls

Arrange sufficient ventilation by local exhaust ventilation and good general ventilation to keep the airborne concentrations of vapors or dust lowest possible and below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

Individual protection measures

General : Gloves must be worn for all work that may result in soiling. Apron/coveralls/protective clothing must be worn when soiling is so great that regular work clothes do not adequately protect skin against contact with the product. Safety eyewear should be used when there is a likelihood of exposure.
Where personal protection equipment is required this shall be chosen in accordance with German BGR regulations of the "Berufsgenossenschaften".

SECTION 8: Exposure controls/personal protection

Hygiene measures : Wash hands, forearms, and face thoroughly after handling compounds and before eating, smoking, using lavatory, and at the end of day.

Eye/face protection : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: safety glasses with side-shields.

Hand protection : Wear chemically resistant gloves (tested to EN374) in combination with 'basic' employee training. The quality of the chemical-resistant protective gloves must be chosen as a function of the specific workplace concentrations and quantity of hazardous substances.

Since the actual work situation is unknown. Supplier of gloves should be contacted in order to find the appropriate type. Below listed glove(s) should be regarded as generic advice:

Recommended: Silver Shield / Barrier / 4H gloves, polyvinyl alcohol (PVA), Viton®, nitrile rubber (>0.3 mm)
Short term exposure: neoprene rubber (>0.1 mm), natural rubber (latex) (>0.4 mm), polyvinyl chloride (PVC)
May be used: butyl rubber (>0.5 mm), butyl rubber (>0.3 mm), nitrile rubber (>0.1 mm)

Body protection : Personal protective equipment for the body should be selected based on the task being performed and the risks involved handling this product.
Wear suitable protective clothing. Always wear protective clothing when spraying.

Respiratory protection : When the product is applied by spraying and for continuous or prolonged work always wear an air-fed respirator e.g. hood with supply of fresh or compressed air or a full face, powered air purifying filter. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator. If working areas have insufficient ventilation: When the product is applied by means that will not generate an aerosol such as, brush or roller wear half or totally covering mask equipped with gas filter of type A, when grinding use particle filter of type P. (EN140) Be sure to use an approved/certified respirator or equivalent. Dry sanding, flame cutting and/or welding of the dry paint film will give rise to dust and/or hazardous fumes. Wet sanding/flatting should be used wherever possible. If exposure cannot be avoided by the provision of local exhaust ventilation, suitable respiratory protective equipment should be used.

Environmental exposure controls

Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : Liquid.

Color : Gray

Odor : Solvent-like

pH : Testing not relevant or not possible due to nature of the product.

Melting point/freezing point : Testing not relevant or not possible due to nature of the product.

Boiling point/boiling range : Testing not relevant or not possible due to nature of the product.

Flash point : Closed cup: 40°C (104°F)

Evaporation rate : Testing not relevant or not possible due to nature of the product.

Flammability : Flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.

Vapor pressure :

	Vapor Pressure at 20˚C			Vapor pressure at 50˚C		
Ingredient name	**mm Hg**	**kPa**	**Method**	**mm Hg**	**kPa**	**Method**
Solvent naphtha (petroleum), light arom.	0.8 - 4.6	0.11 - 0.61				

Vapor density : Not available.

Specific gravity : 2.77 g/cm³

Partition coefficient (LogKow) : Testing not relevant or not possible due to nature of the product.

Auto-ignition temperature :

Ingredient name	°C	°F	Method
Solvent naphtha (petroleum), light arom.	280 - 470	536 - 878	

SECTION 9: Physical and chemical properties

Decomposition temperature :	Testing not relevant or not possible due to nature of the product.
Viscosity :	Aspiration hazard (H304) Not classified. Testing not relevant due to nature of the product.
Explosive properties :	Slightly explosive in the presence of the following materials or conditions: moisture.
Oxidizing properties :	Testing not relevant or not possible due to nature of the product.

9.2 Other information

Solvent(s) % by weight :	Weighted average: 11 %
Water % by weight :	Weighted average: 0 %
VOC content :	308.1 g/l
TOC Content :	Weighted average: 229 g/l
Solvent Gas :	Weighted average: 0.061 m³/l

SECTION 10: Stability and reactivity

10.1 Reactivity

No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability

The product is stable.

10.3 Possibility of hazardous reactions

Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid

Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition.

10.5 Incompatible materials

Highly reactive or incompatible with the following materials: oxidizing materials.
Reactive or incompatible with the following materials: reducing materials, organic materials, acids, alkalis and moisture.

10.6 Hazardous decomposition products

When exposed to high temperatures (i.e. in case of fire) harmful decomposition products may be formed:

Decomposition products may include the following materials: carbon oxides nitrogen oxides metal oxide/oxides

SECTION 11: Toxicological information

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

Exposure to component solvent vapor concentrations may result in adverse health effects such as mucous membrane and respiratory system irritation and adverse effects on the kidneys, liver and central nervous system. Solvents may cause some of the above effects by absorption through the skin. Symptoms and signs include headaches, dizziness, fatigue, muscular weakness, drowsiness and, in extreme cases, loss of consciousness. Repeated or prolonged contact with the preparation may cause removal of natural fat from the skin, resulting in non-allergic contact dermatitis and absorption through the skin. If splashed in the eyes, the liquid may cause irritation and reversible damage. Accidental swallowing may cause stomach pain. Chemical lung inflammation may occur if the product is taken into the lungs via vomiting.
Isocyanate containing products have characteristics that include producing acute irritation and/or sensitisation when breathing, subsequent asthmatic problems and lung contractions. Sensitised people can, as a result from this, show asthmatic symptoms with exposure to atmospheric concentrations far below the TLV. Repeated exposures will lead to permanent damage to the respiratory system.

Acute toxicity

SECTION 11: Toxicological information

Product/ingredient name	Result	Dose / Exposure	Effects
zinc powder - zinc dust (stabilized)	Rat - Oral - LD50	>2000 mg/kg	
	Rat - Inhalation - LC50 Dusts and mists	5.41 mg/l [4 hours]	
Solvent naphtha (petroleum), light arom.	Rat - Oral - LD50	3492 mg/kg	
	Rabbit - Dermal - LD50	3160 mg/kg	
	Rat - Inhalation - LC50 Vapor	6193 mg/m³ [4 hours]	
2-methoxy-1-methylethyl acetate	Rabbit - Dermal - LD50	>5 g/kg	
	Rat - Oral - LD50	8532 mg/kg	
zinc oxide	Rat - Oral - LD50	>5000 mg/kg	
	Rat - Dermal - LD50	>2000 mg/kg	
	Rat - Inhalation - LC50 Dusts and mists	>5.7 mg/l [4 hours]	
diphenylmethane-diisocyanate (isomers and homologues)	Rabbit - Dermal - LD50	>9400 mg/kg	
	Rat - Oral - LD50	49 g/kg	Toxic effects: Behavioral - Somnolence (general depressed activity) Gastrointestinal - Hypermotility, diarrhea Changes in Chemistry or Temperature - Body temperature decrease
	Rat - Inhalation - LC50 Dusts and mists	1.5 mg/l [4 hours]	
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	Rat - Female - Oral - LD50	>5000 mg/kg	
	Rat - Dermal - LD50	>9400 mg/kg	
	Rat - Inhalation - LC50 Dusts and mists	310 mg/m³ [4 hours]	
prepolymer based on aromatic polyisocyanate	Rat - Oral - LD50	>5000 mg/kg	
Methylstyrenated phenol	Rat - Oral - LD50	>2000 mg/kg	
	Rat - Dermal - LD50	>2000 mg/kg	
	Rat - Inhalation - LC50 Dusts and mists	>5 mg/l [4 hours]	
4-isocyanatosulphonyltoluene	Rat - Oral - LD50	2234 mg/kg	Toxic effects: Gastrointestinal - Other changes
	Rat - Inhalation - LC50 Dusts and mists	>640 mg/l [1 hours]	
benzene, 1,1'-methylenebis [4-isocyanato-	Rat - Oral - LD50	9200 mg/kg	Toxic effects: Behavioral - Somnolence (general depressed activity) Behavioral - Ataxia Changes in Chemistry or Temperature - Body temperature decrease
	Rat - Inhalation - LC50 Dusts and mists	1.5 mg/l [4 hours]	
o-(p-isocyanatobenzyl)phenyl isocyanate	Rat - Oral - LD50	>2000 mg/kg	
	Rabbit - Dermal - LD50	>9400 mg/kg	
	Rat - Inhalation - LC50 Dusts and mists	1.5 mg/l [4 hours]	
4-methyl-m-phenylene diisocyanate	Rat - Oral - LD50	5800 mg/kg	Toxic effects: Gastrointestinal - Other changes
	Rabbit - Dermal - LD50	>9400 mg/kg	
	Rat - Inhalation - LC50 Gas.	14 ppm [4 hours]	
	Rat - Inhalation - LC50 Vapor	0.107 mg/l [4 hours]	
	Rat - Inhalation - LC50 Dusts and mists	107 mg/m³ [4 hours]	
	Rat - Male, Female - Inhalation - LC50 Vapor	0.47 mg/l [1 hours]	

Acute toxicity estimates

Product/ingredient name	Oral mg/kg	Dermal mg/kg	Inhalation (gases) ppm	Inhalation (vapors) mg/l	Inhalation (dusts and mists) mg/l

SECTION 11: Toxicological information

Hempel's 174DE				299.2	113.8
zinc powder - zinc dust (stabilized)					5.41
Solvent naphtha (petroleum), light arom.	3492	3160			
2-methoxy-1-methylethyl acetate	8532				
Isocyanic acid, polymethylenepolyphenylene ester, polymer with 1,2-ethanediamine, 2-methyloxirane and 1,2-propanediol				11	
diphenylmethane-diisocyanate (isomers and homologues)	49000			11	
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol					1.5
4-isocyanatosulphonyltoluene	2234				
benzene, 1,1'-methylenebis[4-isocyanato-o-(p-isocyanatobenzyl)phenyl isocyanate	9200				1.5
4-methyl-m-phenylene diisocyanate	5800		14	0.107	1.5

Irritation/Corrosion

Product/ingredient name	Result	Species	Exposure
zinc powder - zinc dust (stabilized)	Human - Skin - Mild irritant	Duration of treatment/ exposure: 72 hours	Amount/concentration applied: 300 Micrograms Intermittent
Solvent naphtha (petroleum), light arom.	Rabbit - Eyes - Mild irritant	Duration of treatment/ exposure: 24 hours	Amount/concentration applied: 100 microliters
	Rabbit - Respiratory - Mild irritant		
	Rabbit - Skin - Moderate irritant		
2-methoxy-1-methylethyl acetate	Rabbit - Respiratory - Mild irritant		
	Rabbit - Eyes - Mild irritant		
zinc oxide	Rabbit - Eyes - Mild irritant	Duration of treatment/ exposure: 24 hours	Amount/concentration applied: 500 milligrams
	Rabbit - Skin - Mild irritant	Duration of treatment/ exposure: 24 hours	Amount/concentration applied: 500 milligrams
diphenylmethane-diisocyanate (isomers and homologues)	Rabbit - Eyes - Mild irritant		Amount/concentration applied: 100 milligrams
	Rabbit - Skin - Mild irritant		
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	Rabbit - Skin - Mild irritant		
	Rabbit - Eyes - Mild irritant		
prepolymer based on aromatic polyisocyanate	Rabbit - Skin - Mild irritant		
	Rabbit - Respiratory - Irritant		
Methylstyrenated phenol	Rabbit - Eyes - Mild irritant		
	Rabbit - Skin - Irritant		
4-isocyanatosulphonyltoluene	Rabbit - Eyes - Moderate irritant		Amount/concentration applied: 100 microliters
	Rabbit - Skin - Mild irritant	Duration of treatment/ exposure: 24 hours	Amount/concentration applied: 500 microliters
benzene, 1,1'-methylenebis [4-isocyanato-	Rabbit - Eyes - Moderate irritant		Amount/concentration applied: 100 milligrams
	Rabbit - Skin - Irritant		
o-(p-isocyanatobenzyl)phenyl isocyanate	Rabbit - Skin - Irritant		
4-methyl-m-phenylene diisocyanate	Rabbit - Eyes - Severe irritant		Amount/concentration applied: 100 milligrams
	Rabbit - Respiratory - Severe irritant		
	Rabbit - Skin - Severe irritant		

Sensitizer

Product/ingredient name	Species - Route of exposure	Result
Isocyanic acid, polymethylenepolyphenylene ester, polymer with 1,2-ethanediamine, 2-methyloxirane and 1,2-propanediol	Mouse - skin	Result: Sensitizing
	Guinea pig - Respiratory	Result: Sensitizing
diphenylmethane-diisocyanate (isomers and homologues)	Mouse - skin	Result: Sensitizing
	Rat - Respiratory	Result: Sensitizing
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	Mouse - skin	Result: Sensitizing
prepolymer based on aromatic polyisocyanate	Guinea pig - skin	Result: Sensitizing

SECTION 11: Toxicological information

benzene, 1,1'-methylenebis [4-isocyanato-	Mouse - skin	Result: Sensitizing
	Guinea pig - Respiratory	Result: Sensitizing
o-(p-isocyanatobenzyl)phenyl isocyanate	Mouse - skin	Result: Sensitizing
	Guinea pig - Respiratory	Result: Sensitizing
4-methyl-m-phenylene diisocyanate	Guinea pig - skin	Result: Sensitizing

Mutagenic effects

No known data avaliable in our database.

Carcinogenicity

No known data avaliable in our database.

Reproductive toxicity

No known data avaliable in our database.

Specific target organ toxicity (single exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Solvent naphtha (petroleum), light arom.	Category 3		Respiratory tract irritation
	Category 3		Narcotic effects
2-methoxy-1-methylethyl acetate	Category 3		Narcotic effects
Isocyanic acid, polymethylenepolyphenylene ester, polymer with 1,2-ethanediamine, 2-methyloxirane and 1,2-propanediol	Category 3		Respiratory tract irritation
diphenylmethane-diisocyanate (isomers and homologues)	Category 3		Respiratory tract irritation
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	Category 3		Respiratory tract irritation
4-isocyanatosulphonyltoluene	Category 3		Respiratory tract irritation
benzene, 1,1'-methylenebis[4-isocyanato-	Category 3		Respiratory tract irritation
o-(p-isocyanatobenzyl)phenyl isocyanate	Category 3		Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Product/ingredient name	Category	Route of exposure	Target organs
Isocyanic acid, polymethylenepolyphenylene ester, polymer with 1,2-ethanediamine, 2-methyloxirane and 1,2-propanediol	Category 2	inhalation	-
diphenylmethane-diisocyanate (isomers and homologues)	Category 2	inhalation	respiratory tract
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	Category 2	inhalation	-
benzene, 1,1'-methylenebis[4-isocyanato-	Category 2	inhalation	respiratory tract
o-(p-isocyanatobenzyl)phenyl isocyanate	Category 2	inhalation	respiratory tract

Aspiration hazard

Product/ingredient name	Result
Solvent naphtha (petroleum), light arom.	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure

Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential chronic health effects

No known significant effects or critical hazards.

11.2 Information on other hazards

Endocrine disrupting properties : The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

Other information : No additional known significant effects or critical hazards.

SECTION 12: Ecological information

12.1 Toxicity

Do not allow to enter drains or watercourses. Very toxic to aquatic life with long lasting effects.

Product/ingredient name	Result	Species	Exposure
zinc powder - zinc dust (stabilized)	Chronic - EC10 - Fresh water	Algae - Green algae - *Pseudokirchneriella subcapitata* - Exponential growth phase	27.3 µg/l [72 hours]
	Chronic - EC10 - Fresh water	Daphnia - Water flea - *Daphnia magna*	59.2 µg/l [21 days]
	Chronic - NOEC - Fresh water	Fish - common carp - *Cyprinus carpio*	2.6 µg/l [4 weeks]
	Acute - EC50 - Marine water	Algae	0.3 mg/l [72 hours]
	Acute - EC50 - Fresh water	Daphnia	0.354 mg/l [48 hours]
	Acute - LC50 - Fresh water	Fish	0.238 - 0.269 mg/l [96 hours]
Solvent naphtha (petroleum), light arom.	Acute - LC50	Fish - *Oncorhynchus mykiss (rainbow trout)*	9.22 mg/l [96 hours]
	Acute - EC50	Algae - *Pseudokirchneriella subcapitata (green algae)*	2.6 mg/l [96 hours]
	Acute - EC50	Daphnia	3.2 mg/l [48 hours]
2-methoxy-1-methylethyl acetate	Acute - LC50	Fish	100 - 180 mg/l [96 hours]
zinc oxide	Acute - LC50 - Fresh water	Daphnia - Water flea - *Daphnia magna* - Neonate	24600 µg/l [48 hours]
	Acute - EC50	Algae - Green algae - *Pseudokirchneriella subcapitata* - Exponential growth phase	0.17 mg/l [72 hours]
	Acute - EC50	Daphnia - Green algae - *Pseudokirchneriella subcapitata* - Exponential growth phase	1 mg/l [48 hours]
	EC50	Daphnia	0.413 mg/l [48 hours]
	LC50	Fish	0.1169 mg/l [96 hours]
	Chronic - EC50	Algae	0.136 mg/l [72 hours]
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	Acute - IC50	Algae	>100 mg/l [72 hours]
Methylstyrenated phenol	Acute - EC50	Daphnia	14 - 51 mg/l [48 hours]
	Acute - EC50	Algae	15 mg/l [72 hours]
	Acute - EC50	Fish	25.8 mg/l [96 hours]
benzene, 1,1'-methylenebis [4-isocyanato-	Acute - LC50	Fish	>1000 mg/l [96 hours]
	Acute - EC50	Algae	>1640 mg/l [72 hours]
o-(p-isocyanatobenzyl)phenyl isocyanate	Acute - LC50	Fish	>1000 mg/l [96 hours]
	Acute - EC50	Algae	>1640 mg/l [72 hours]
4-methyl-m-phenylene diisocyanate	Acute - LC50 - Fresh water	Fish - Fathead minnow - *Pimephales promelas*	164500 - 240400 µg/l [96 hours]
	Chronic - NOEC	Daphnia	1.1 mg/l
	Acute - EC50	Daphnia	12.5 mg/l [48 hours]
	Acute - EC50 - Fresh water	Algae	4300 mg/l [96 hours]

12.2 Persistence and degradability

Product/ingredient name	Test	Result
Solvent naphtha (petroleum), light arom.		>70% [28 days] - Readily
		>60% [28 days] - Readily
	OECD Ready Biodegradability - Manometric Respirometry Test	78% [28 days] - Readily
2-methoxy-1-methylethyl acetate	OECD Ready Biodegradability - Manometric Respirometry Test	83% [28 days] - Readily
	OECD Ready Biodegradability - Manometric Respirometry Test	90% [28 days] - Readily
diphenylmethane-diisocyanate (isomers and homologues)	OECD Inherent Biodegradability: Modified MITI Test (II)	0.1% [28 days] - Not readily
benzene, 1,1'-methylenebis [4-isocyanato-	OECD Inherent Biodegradability: Modified MITI Test (II)	0.1% [28 days] - Not readily
o-(p-isocyanatobenzyl)phenyl isocyanate	OECD Inherent Biodegradability: Modified MITI Test (II)	0.1% [28 days] - Not readily
4-methyl-m-phenylene diisocyanate	OECD Inherent Biodegradability: Modified MITI Test (II)	0% [28 days] - Not readily

SECTION 12: Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Solvent naphtha (petroleum), light arom.			Readily
2-methoxy-1-methylethyl acetate			Readily
zinc oxide			Not readily
diphenylmethane-diisocyanate (isomers and homologues)			Not readily
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol			Not readily
prepolymer based on aromatic polyisocyanate			Not readily
Methylstyrenated phenol			Not readily
benzene, 1,1'-methylenebis [4-isocyanato-			Not readily
o-(p-isocyanatobenzyl)phenyl isocyanate			Not readily
4-methyl-m-phenylene diisocyanate			Not readily

12.3 Bioaccumulative potential

Product/ingredient name	$LogP_{ow}$	BCF	Potential
Solvent naphtha (petroleum), light arom.	-	10 - 2500	High
2-methoxy-1-methylethyl acetate	1.2	-	Low
zinc oxide	2.2	60960	High
diphenylmethane-diisocyanate (isomers and homologues)	-	<14	Low
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	4.51	-	High
Methylstyrenated phenol	3.627	-	Low
benzene, 1,1'-methylenebis[4-isocyanato-	4.51	200	Low
o-(p-isocyanatobenzyl)phenyl isocyanate	4.51	200	Low
4-methyl-m-phenylene diisocyanate	3.43	-	Low

12.4 Mobility in soil

Soil/Water partition coefficient

Product/ingredient name	logKoc	Koc
2-methoxy-1-methylethyl acetate	0.36	2.31363
4-isocyanatosulphonyltoluene	1.5	31.6836
benzene, 1,1'-methylenebis[4-isocyanato-	3.07	1167.83
o-(p-isocyanatobenzyl)phenyl isocyanate	2.86	720.413
4-methyl-m-phenylene diisocyanate	1.2	15.9342

Results of PMT and vPvM assessment

Product/ingredient name	PMT	P	M	T	vPvM	vP	vM
zinc powder - zinc dust (stabilized)	No	No	No	No	No	No	No
Solvent naphtha (petroleum), light arom.	No	No	No	No	No	No	No
2-methoxy-1-methylethyl acetate	No	No	Yes	No	No	No	Yes
Isocyanic acid, polymethylenepolyphenylene ester, polymer with 1,2-ethanediamine, 2-methyloxirane and 1,2-propanediol	No	No	No	Yes	No	No	No
zinc oxide	No	No	No	No	No	No	No
diphenylmethane-diisocyanate (isomers and homologues)	No	No	No	Yes	No	No	No
reaction products of (formaldehyde, oligomeric reaction products with aniline and phosgene) and 2-ethylhexan-1-ol	No	No	No	Yes	No	No	No
prepolymer based on aromatic polyisocyanate	No	No	No	No	No	No	No
Methylstyrenated phenol	No	No	No	No	No	Yes	No
4-isocyanatosulphonyltoluene	No	No	Yes	No	No	No	Yes
benzene, 1,1'-methylenebis[4-isocyanato-	No	No	No	Yes	No	No	No
o-(p-isocyanatobenzyl)phenyl isocyanate	No	No	Yes	Yes	No	No	No
4-methyl-m-phenylene diisocyanate	No	No	Yes	No	No	No	Yes

Mobility : The product does not meet the criteria to be considered as a PMT or vPvM.

12.5 Results of PBT and vPvB assessment

Regulation (EC) No. 1907/2006 [REACH]

See Section 15 for details. EU - Substances of very high concern - vPvB

SECTION 12: Ecological information

12.6 Endocrine disrupting properties

The product does not meet the criteria to be considered as having endocrine disrupting properties according to the criteria set out in either Regulation (EC) No. 1907/2006 or Regulation (EC) No 1272/2008.

12.7 Other adverse effects

No known significant effects or critical hazards.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

The generation of waste should be avoided or minimized wherever possible. Residues of the product is listed as hazardous waste. Dispose of according to all state and local applicable regulations. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Spillage, remains, discarded clothes and similar should be discarded in a fireproof container.

European waste catalogue no. (EWC) is given below.

European waste catalogue (EWC) : 08 01 11*

Packaging

The generation of waste should be avoided or minimized wherever possible. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible.

Empty containers or liners may retain some product residues.

SECTION 14: Transport information

Transport may take place according to national regulation or ADR for transport by road, RID for transport by train, IMDG for transport by sea, IATA for transport by air.

	14.1 UN / ID no.	14.2 Proper shipping name	14.3 Transport hazard class(es)	14.4 PG*	14.5 Env*	Additional information
ADR/RID Class	UN1263	PAINT	3 	III	Yes.	The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Tunnel code** (D/E)
IMDG Class	UN1263	PAINT. (zinc powder - zinc dust (stabilized))	3 	III	Yes.	The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg. **Emergency schedules** F-E, S-E
IATA Class	UN1263	PAINT	3 	III	Yes.	The environmentally hazardous substance mark may appear if required by other transportation regulations.

PG* : Packing group
Env.* : Environmental hazards

14.6 Special precautions for user

Transport within user's premises: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information

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

EU Regulation (EC) No. 1907/2006 (REACH) Annex XIV - List of substances subject to authorization - Substances of very high concern

Annex XIV

None of the components are listed.

Substances of very high concern

SECTION 15: Regulatory information

Ingredient name	Intrinsic property	Status	Reference number	Date of revision
Methylstyrenated phenol	vPvB	Candidate	D(2023)8585-DC	1/23/2024

Annex XVII - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles

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

Other EU regulations

Seveso category This product is controlled under the Seveso III Directive.

Seveso category
P5c: Flammable liquids 2 and 3 not falling under P5a or P5b E1: Hazardous to the aquatic environment - Acute 1 or Chronic 1

National regulations

Austria

VbF class : A II
Very dangerous flammable liquid.

Limitation of the use of organic solvents : Permitted.

Germany

Storage code : 3

Hazardous incident ordinance : This product is controlled under the Germany Hazardous Incident Ordinance.

Danger criteria :

Category	Reference number
P5c: Flammable liquids 2 and 3 not falling under P5a or P5b	1.2.5.3
E1: Hazardous to the aquatic environment - Acute 1 or Chronic 1	1.3.1

Hazard class for water : 3

Technical instruction on air quality control :

Category	Conc. (% w/w)

AOX : The product contains organically bound halogens and can contribute to the AOX value in waste water.

References : **Other Rules:**
- BGR 190 (Rules for the use of respiratory protective equipment)
- BGR 192 (Rules for the use of eye and face protection)
- BGR 195 (Rules for the use of gloves)

Switzerland

VOC content : 10.6 % (w/w)

National regulations Non-GHS

List name	Product/ingredient name	Name on list	Classification	Notes
Austria Occupational Exposure Limits	benzene, 1,1'-methylenebis [4-isocyanato-	Diphenylmethan-diisocyanat (alle Isomeren)	Carc. B	-
Austria Occupational Exposure Limits	o-(p-isocyanatobenzyl)phenyl isocyanate	Diphenylmethan-diisocyanat (alle Isomeren)	Carc. B	-
Austria Occupational Exposure Limits	4-methyl-m-phenylene diisocyanate	2,4-Diisocyanattoluol; 2,4-Toluylendiisocyanat	Carc. B	-
Germany TRGS 905	diphenylmethane-diisocyanate (isomers and homologues)	Techn. ("Polymeres") MDI (in Form atembarer Aerosole, A-Fraktion); pMDI	K3	-
DFG MAC-values list		polymeric MDI (inhalable fraction); MDI oligomers; pMDI	K3	
DFG MAC-values list	benzene, 1,1'-methylenebis [4-isocyanato-	Diphenylmethane-4,4'-diisocyanate (inhalable fraction); 4,4'-Methylene diphenyl diisocyanate; MDI	K3	-

15.2 Chemical Safety Assessment

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SECTION 16: Other information

Abbreviations and acronyms :

ATE = Acute Toxicity Estimate
CLP = Classification, Labelling and Packaging Regulation [Regulation (EC) No. 1272/2008]
EUH statement = CLP-specific Hazard statement
RRN = REACH Registration Number
DNEL = Derived No Effect Level
PNEC = Predicted No Effect Concentration

Full text of abbreviated H statements :

H226	Flammable liquid and vapor.
H304	May be fatal if swallowed and enters airways.
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.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.
H412	Harmful to aquatic life with long lasting effects.
EUH014	Reacts violently with water.
EUH066	Repeated exposure may cause skin dryness or cracking.

Full text of classifications [CLP/GHS] :

Acute Tox. 1	ACUTE TOXICITY - Category 1
Acute Tox. 4	ACUTE TOXICITY - Category 4
Aquatic Acute 1	AQUATIC HAZARD (ACUTE) - Category 1
Aquatic Chronic 1	AQUATIC HAZARD (LONG-TERM) - Category 1
Aquatic Chronic 2	AQUATIC HAZARD (LONG-TERM) - Category 2
Aquatic Chronic 3	AQUATIC HAZARD (LONG-TERM) - Category 3
Asp. Tox. 1	ASPIRATION HAZARD - Category 1
Carc. 2	CARCINOGENICITY - Category 2
Eye Irrit. 2	SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 2
Flam. Liq. 3	FLAMMABLE LIQUIDS - Category 3
Resp. Sens. 1	RESPIRATORY SENSITIZATION - Category 1
Skin Irrit. 2	SKIN CORROSION/IRRITATION - Category 2
Skin Sens. 1	SKIN SENSITIZATION - Category 1
Skin Sens. 1B	SKIN SENSITIZATION - Category 1B
STOT RE 2	SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2
STOT SE 3	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 3

Procedure used to derive the classification according to Regulation (EC) No. 1272/2008 [CLP/GHS]

Classification	Justification
FLAMMABLE LIQUIDS	On basis of test data
RESPIRATORY SENSITIZATION	Calculation method
SKIN SENSITIZATION	Calculation method
CARCINOGENICITY	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation)	Calculation method
AQUATIC HAZARD (ACUTE)	Calculation method
AQUATIC HAZARD (LONG-TERM)	Calculation method

Notice to reader

Indicates information that has changed from previously issued version.

The information contained in this safety data sheet is based on the present state of knowledge and EU and national legislation. It provides guidance on health, safety and environmental aspects for handling the product in a safe way and should not be construed as any guarantee of the technical preformance or suitability for particular applications.
It is always the duty of the user/employer to ascertain that the work is planned and carried out in accordance with the national regulations.

Safe Use of Mixture Information
Hempel's 174DE

This document is intended to communicate the conditions of safe use for the product and should always be read in combination with the product's Safety Data Sheet and labels.

General description of the process covered

Indoor or outdoor spray painting by professionals for specialist applications, with good general room ventilation plus respiratory protection

This safe use information is linked to : Professional spray painting, near-industrial setting
Priority

Sector(s) of use : Industrial uses - Professional uses

Product category(ies) : Coatings and paints, thinners, paint removers

Operational conditions

Place of use : Indoor or outdoor use

Range of application/Process conditions : Assumes a good standard of occupational hygiene and safety management has been implemented. Assumes that activities are undertaken with appropriate and well maintained equipment by trained personnel operating under supervision.

Others : Depending on actual conditions of application. Please consult your local HEMPEL representative for further advise.

Risk management measures (RMM)

Contributing activity	Process category (ies)	Maximum duration	Ventilation		Respiratory	Eye	Hands
			Type and air changes per hour				
Preparation of material for application	PROC05	More than 4 hours	Good general room ventilation - Outdoors	3 - 5	Wear a respirator conforming to EN140 with an assigned protection factor of at least 10.	Use eye protection according to EN 166.	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Loading of application equipment and handling of coated parts before curing	PROC08b	More than 4 hours	Good general room ventilation - Outdoors	3 - 5	Wear a respirator conforming to EN140 with an assigned protection factor of at least 10.	Use eye protection according to EN 166.	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Industrial application of coatings by spraying	PROC07	More than 4 hours	Good general room ventilation - Outdoors	3 - 5	Use a properly fitted, air-purifying or air-fed respirator. EN 14594 with an assigned protection factor of at least 20.	Use eye protection according to EN 166.	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Film formation - force drying, stoving and other technologies	PROC04	More than 4 hours	Good general room ventilation - Outdoors	3 - 5	None	Use eye protection according to EN 166.	Wear suitable gloves tested to EN374.
Cleaning	PROC05	More than 4 hours	Good general room ventilation - Outdoors	3 - 5	Wear a respirator conforming to EN140 with an assigned protection factor of at least 10.	Use eye protection according to EN 166.	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.
Waste management	PROC08b	More than 4 hours	Good general room ventilation - Outdoors	3 - 5	Wear a respirator conforming to EN140 with an assigned protection factor of at least 10.	Use eye protection according to EN 166.	Wear chemically resistant gloves (tested to EN374) in combination with specific activity training.

See section 8 of this Safety Data Sheet for specifications.