SHIELDOKIT CONDUCTIVE GLUE (COMPONENT A) 3980

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Detail : 3980 Electrically Conductive Adhesive (Shieldokit)

Application of the substance / the preparation: Electrically conductive epoxy adhesive resin part A for use with hardeners part B

Manufacturer / supplier:

Holland Shielding Systems B.V.
Jacobus Lipsweg 124
3316 BP Dordrecht
the Netherlands
Ph: +31(0)78- 204 90 00
www.hollandshielding.com
info@hollandshielding.com

In an emergency, please contact your local/national poison control center (accessible only to medical personnel).

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008	
 GHS09 environment	
Aquatic Acute 1	H400 Very toxic to aquatic life.
Aquatic Chronic 1	H410 Very toxic to aquatic life with long lasting effects.
 GHS07	
Skin Irrit. 2	H315 Causes skin irritation.
Eye Irrit. 2	H319 Causes serious eye irritation
Skin Sens. 1	H317 May cause an allergic skin reaction.

2.2 Label Elements

Labelling according to Regulation (EC) No 1272/2008	
Hazard pictograms	 GHS07 GHS09
Signal Word:	Warning
Hazard-determining components of labelling	Silver (Powder) phenol, polymer with formaldehyde, glycidyl ether

Hazard statements	
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H317	May cause an allergic skin reaction.
H410	Very toxic to aquatic life with long lasting effects.

Precautionary statements	
P102	Keep out of reach of children.
P261	Avoid breathing fumes and vapors.
P280	Wear protective gloves / eye protection.
P302+P352	IF ON SKIN: Wash with plenty of water.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333+P313	If skin irritation or rash occurs: Get medical advice.
P501	Dispose of contents and container in accordance with local, regional, and national regulations.

2.3 OTHER HAZARDS

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

Determination of endocrine-disrupting properties
Endocrine Disruptor substance ≥ 0.1% = none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Description: Mixture of substances listed below with nonhazardous additions.			
Dangerous Components:			
	Silver (Powder)		
CAS: 7440-22-4 EINECS: 231-131-3		Aquatic Acute 1, H400 (M=10); Aquatic Chronic 1, H410 (M=10)	67.0%
	phenol, polymer with formaldehyde, glycidyl ether Alternative CAS number: 9003-36-5		
CAS: 28064-14-4		Aquatic Chronic 2, H411;	33.0%
		Skin Irrit. 2, H315; Eye Irrit. 2, H319; Skin Sens. 1, H317	

Additional Information:
For the wording of the listed hazard phrases refer to section 16.

4. FIRST AID MEASURES

4.1 Description of first aid measures

After inhalation	Remove person to fresh air and keep comfortable for breathing. If symptoms persist consult doctor.
After skin contact	Wash with plenty water. If skin irritation or rash occurs: Get medical advice or attention. Take off contaminated clothing and wash it before reuse.
After eye contact	Rinse cautiously with water for 20 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice or attention.
After swallowing	Rinse mouth. Do NOT induce vomiting. If symptoms persist consult doctor.

4.2 Most important symptoms and effects, both acute and delayed
No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed
No further relevant information available.

SHIELDOKIT CONDUCTIVE GLUE (COMPONENT A) 3980

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing agents:	Use fire extinguishing methods suitable to surrounding conditions

5.2 Special hazards arising from the substance or mixture

The flu-like symptoms of metal fever may be delayed, occurring 4 to 12 hours after exposure.
Not flammable or combustible, but burns if involved in a fire. Produces irritating smoke of unknown toxicity in fires. Prevent fire-fighting wash from entering waterway or sewer system. Inhalation of metal fumes may cause metal fever and irritate the respiratory tract.
Hazardous combustion products:
Carbon Oxides (COx)
toxic metal fumes

5.3 Advice for firefighters

Protective equipment:	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation
Avoid breathing the fumes or vapors.
Remove or keep away all sources of extreme heat or open flames.

6.2 Environmental precautions:

Avoid release to the environment.
Do not allow to enter sewers/ surface or ground water.

6.3 Methods and material for containment and cleaning up:

Not readily flowable.
Collect in a sealable, chemical-resistant container.
Wipe the residues with a paper towel and place dirty towels in container.
Use soap and water to remove the last traces of residue.

6.4 Reference to other sections

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.
Avoid breathing fumes or vapours.
Wear protective gloves and eye protection.
Wash hands and exposed skin thoroughly after handling.
Take off contaminated clothing and wash it before reuse.
Collect spillage.
Contaminated work clothing should not be allowed out of the workplace.
Information about fire - and explosion protection: No special measures required.

7.2 Conditions for safe storage, including any incompatibilities

Storage:	
Requirements to be met by storerooms and receptacles	Keep in a dry and clean area, away from incompatible substances
Information about storage in one common storage facility	Not required.
Further information about storage conditions	Keep container tightly sealed.

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:	The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information:
The lists valid during the making were used as basis.

8.2 Exposure controls

Appropriate engineering controls
No further data; see section 7.

	Individual protection measures, such as personal protective equipment	
General protective and hygienic measures	Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.	
Respiratory protection	In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device. If the product is heated or worker has a known allergic reaction, consider using a full mask with organic vapor cartridge or with an independent air supply.	
Hand protection	Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. For Incidental Contact: Type = Nitrile ; Permeation 3 (> 360 min); Min. Thickness = 0.11 mm ; EN 374-2 The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation	 Protective gloves: EN374
Material of gloves	The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.	
Penetration time of glove material	The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.	
Eye protection	Safety glasses	 Wear safety glasses: EN 166

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Solid
Form	Pasty
Colour	Silver grey
Odour	Light
Odour threshold	Not available
Melting point/freezing point	Not available
Boiling point or initial boiling point and boiling range	Not available
Flammability	Non flammable
Lower and upper explosion limit	
Lower	Not applicable
Upper	Not applicable
Flash point	>150 °C
Decomposition temperature	Not available

pH	Not applicable.
Viscosity	
Kinematic viscosity	Not applicable.
Dynamic	Not applicable.
Solubility	
water	Insoluble.
Partition coefficient n-octanol/water (log value)	Not available
Vapour pressure	Not applicable.
Relative density at 20 °C	2.5
Vapour density (air=1):	Not applicable.
Particle characteristics	See section 3.

9.2 Other information

9.2.1 Information with regard to physical

hazard classes	Not applicable

9.2.2 Other safety characteristics

Evaporation rate	Not applicable.
Ignition temperature:	Product is not selfigniting.
Explosive properties:	Product does not present an explosion hazard.

Solvent content:	
Organic solvents:	Not available
Solids content:	100.0 %

10. STABILITY AND REACTIVITY

10.1 Reactivity
Reacts exothermically with amines.

10.2 Chemical stability Chemically stable at normal temperatures and pressures.

Thermal decomposition / conditions to be avoided:	No decomposition if used according to specifications.

10.3 Possibility of hazardous reactions
No dangerous reactions known.

10.4 Conditions to avoid
Avoid ignition sources, open flames, and incompatible substances.
Do not use in away that forms mist or aerosolizes the product.

10.5 Incompatible materials:
Strong oxidizing agents
Strong acids
Strong bases

10.6 Hazardous decomposition products:
No dangerous decomposition products known.
Hazardous combustion products: see section 5.

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SHIELDOKIT CONDUCTIVE GLUE (COMPONENT A) 3980

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

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

LD/LC50 values relevant for classification:

7440-22-439803980	Silver (Powder)	
Oral	LD50	>2,000 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rat)
Inhalative	LC50/4 h	≥ 5.16 mg/L /4 h (rat)
28064-14-4	phenol, polymer with formaldehyde, glycidyl ether	
Oral	LD50	>2,000 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rabbit)

Primary irritant effect

Skin corrosion/irritation	Causes skin irritation
Serious eye damage/irritation	Causes serious eye irritation
Respiratory or skin sensitisation	May cause an allergic skin reaction

Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Based on available data, the classification criteria are not met.
STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.

Summary of Effects and Symptoms by Routes of Exposure	
Eyes	redness irritation
Skin	redness rash, allergic contact dermatitis irritation
Inhalation	Low toxicity: sore throat cough asthma in pre-sensitized individuals
Swallowed	Low toxicity: abdominal discomfort nausea vomiting

Additional toxicological information:

Delayed and immediate effects as well as chronic effects from short and long-term exposure	Prolonged and repeated exposure to uncured epoxy hardener may lead to skin sensitization. Exposure to silver powder may also cause argyria, an irreversible blue-grey discoloration of the skin.

11.2 Information on other hazards

Endocrine disrupting properties	None of the ingredients is listed.

SHIELDOKIT CONDUCTIVE GLUE (COMPONENT A) 3980

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity	Very toxic to aquatic life with long lasting effect. Avoid release to the environment. Collect spillage.

28064-14-4 phenol, polymer with formaldehyde, glycidyl ether	
LC50 96h	>1– 10 mg/L (not defined) In Europe, similar epoxy resin mixtures with CAS 28064-14-4 are generally classified as chronic category 2 marine pollutant due to LC50 96 h of >1 mg/L but 10 mg/L.

12.2 Persistence and degradability
No further relevant information available.

12.3 Bioaccumulative potential
No further relevant information available.

12.4 Mobility in soil
No further relevant information available.

12.5 Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

12.6 Endocrine disrupting properties
The product does not contain substances with endocrine disrupting properties.

12.7 Other adverse effects

Remark	Very toxic for fish

Additional ecological information

General notes	Also poisonous for fish and plankton in water bodies. Very toxic for aquatic organisms Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water Do not allow product to reach ground water, water course or sewage system. Danger to drinking water if even small quantities leak into the ground.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Recommendation	This material and its container must be disposed of as hazardous waste.

European waste catalogue	
HP4	Irritant- skin irritation and eye damage
HP13	Sensitising
HP14	Ecotoxic

Uncleaned packaging	
Recommendation	Containers may still present a chemical hazard/ danger when empty. Dispose of contents in accordance with all local, regional, national, and international regulations. Where possible retain label warnings and SDS and observe all notices pertaining to the product.

14. TRANSPORT INFORMATION

14.1 UN number or ID number

ADR, IMDG, IATA	UN3077

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SHIELDOKIT CONDUCTIVE GLUE (COMPONENT A) 3980

14.2 UN proper shipping name

ADR	NOT REGULATED by road ADR Special Provision 375 for sizes 5 kg or less. ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver (Powder), phenol, polymer with formaldehyde, glycidyl ether)
IMDG	NOT REGULATED for sea freight IMDG according to 2.10.2.7 for sizes up to 5 kg. ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver (Powder), phenol, polymer with formaldehyde, glycidyl ether)
IATA	NOT REGULATED by Air IATA Special Provision A197 for sizes 5kg or less. Environmentally hazardous substance, solid, n.o.s. (Silver (Powder), phenol, polymer with formaldehyde, glycidyl ether)

14.3 Transport hazard class(es)

ADR, IMDG	
Class	9 Miscellaneous dangerous substances and articles.
Label	9
IATA	
Class	9 Miscellaneous dangerous substances and articles.
Label	9

14.4 Packing group

ADR, IMDG, IATA	III

14.5 Environmental hazards:

Marine pollutant	MARINE POLLUTANT
Special marking (ADR)	ENVIRONMENTALLY HAZARDOUS
Special marking (IATA)	ENVIRONMENTALLY HAZARDOUS Symbol (fish and tree)

14.6 Special precautions for user Not applicable.

Marine pollutant:	90
EMS Number	F-A,S-F
Stowage Category	A
Stowage Code	SW23 When transported in BK3 bulk container, see 7.6.2.12 and 7.7.3.9.

14.7 Maritime transport in bulk according to

IMO instruments	Not applicable.

ADR	
Limited quantities (LQ)	5 kg
Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30g Maximum net quantity per outer packaging:1000 g
Transport category	3
Tunnel restriction code	(-)

SHIELDOKIT CONDUCTIVE GLUE (COMPONENT A) 3980

IMDG	
Limited quantities (LQ)	5 kg
Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30g Maximum net quantity per outer packaging: 1000 g
UN "Model Regulation":	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (SILVER (POWDER), PHENOL, POLYMER WITH FORMALDEHYDE, GLYCIDYL ETHER), 9, III

15. REGULATORY INFORMATION

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

Poisons Act	
Regulated explosives precursors (Part 1)	None of the ingredients is listed.
Regulated poisons (Part 2)	None of the ingredients is listed.
Reportable explosives precursors (Part 3)	None of the ingredients is listed.
Reportable poisons (Part 4)	None of the ingredients is listed.

Directive 2012/18/EU	
Named dangerous substances- ANNEX I	None of the ingredients is listed.
Seveso category	E1 Hazardous to the Aquatic Environment
Qualifying quantity (tonnes) for the application of lower-tier requirements	100 t
Qualifying quantity (tonnes) for the application of upper-tier requirements	200 t
DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II	None of the ingredients is listed.
Annex I- RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))	None of the ingredients is listed.
Annex II- REPORTABLE EXPLOSIVES PRECURSORS	None of the ingredients is listed.
Regulation (EC) No 273/2004 on drug precursors	None of the ingredients is listed.
Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors	None of the ingredients is listed.

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases	
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
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.

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SHIELDOKIT CONDUCTIVE GLUE (COMPONENT A) 3980

Classification according to Regulation (EC) No 1272/2008	
Skin corrosion/irritation Serious eye damage/irritation Skin sensitisation Hazardous to the aquatic environment- short-term (acute) aquatic hazard Hazardous to the aquatic environment - long-term (chronic) aquatic hazard	The classification of the mixture is generally based on the calculation method using substance data according to Regulation (EC) No 1272/2008.

Abbreviations and acronyms	
ADR	Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
CAS	Chemical Abstracts Service (division of the American Chemical Society)
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent, Bioaccumulative and Toxic
vPvB	very Persistent and very Bioaccumulative
ATE	Acute toxicity estimate values
Skin Irrit. 2	Skin corrosion/irritation – Category 2
Eye Irrit. 2	Serious eye damage/eye irritation – Category 2
Skin Sens. 1	Skin sensitisation – Category 1
Aquatic Acute 1	Hazardous to the aquatic environment- acute aquatic hazard – Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment- long-term aquatic hazard – Category 1
Aquatic Chronic 2	Hazardous to the aquatic environment- long-term aquatic hazard – Category 2

SHIELDOKIT CONDUCTIVE GLUE (COMPONENT B) 3980

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Detail : 3980 Electrically Conductive Adhesive (Shieldokit)

Application of the substance / the preparation: Electrically conductive epoxy adhesive hardener part B for use with resins part A

Manufacturer / supplier:

Holland Shielding Systems B.V.
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In an emergency, please contact your local/national poison control center (accessible only to medical personnel).

2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008	
 GHS05 corrosion	
Eye Dam. 1	H318 Causes serious eye damage.
 GHS09 environment	
Aquatic Acute 1	H400 Very toxic to aquatic life.
Aquatic Chronic 1	H410 Very toxic to aquatic life with long lasting effects.
 GHS07	
Skin Irrit. 2	H315 Causes skin irritation.
Skin Sens. 1	H317 May cause an allergic skin reaction.

2.2 Label Elements

Labelling according to Regulation (EC) No 1272/2008	
Hazard pictograms	 GHS05 GHS07 GHS09
Signal Word:	Danger
Hazard-determining components of labelling	3-aminopropyldimethylamine Methyleneoxide, polymer with benzenamine,hydrogenated

Hazard statements	
H315	Causes skin irritation.
H318	Causes serious eye damage.
H317	May cause an allergic skin reaction.
H410	Very toxic to aquatic life with long lasting effects.

Material Safety Data Sheet

Revision date: 27-01-2025

Precautionary statements	
P102	Keep out of reach of children.
P261	Avoid breathing fumes and vapors.
P280	Wear protective gloves / eye protection.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor.
P391	Collect spillage.
P501	Dispose of contents and container in accordance with local, regional, and national regulations.

2.3 OTHER HAZARDS

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

Determination of endocrine-disrupting properties
Endocrine Disruptor substance ≥ 0.1% = none

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.2 Mixtures

Description: Mixture of substances listed below with nonhazardous additions.

Dangerous Components:

CAS: 7440-22-4 EINECS: 231-131-3	Silver (Powder)		67.0%
		Aquatic Acute 1, H400 (M=10); Aquatic Chronic 1, H410 (M=10)	
CAS: 109-55-7 EINECS: 203-680-9 Index number: 612-061-00-6	3-aminopropyldimethylamine		3.0%
		Flam. Liq. 3, H226;	
		Skin Corr. 1B, H314;	
		Acute Tox. 4, H302; Skin Sens. 1, H317	
CAS: 100-51-6 EINECS: 202-859-9 Index number: 603-057-00-5	benzyl alcohol		0.8%
		Acute Tox. 4, H302; Acute Tox. 4, H332; Skin Sens. 1B, H317 ATE: LD50 oral: 1,200 mg/kg	
CAS: 135108-88-2	Methyleneoxide, polymer with benzenamine,hydrogenated		0.8%
		Acute Tox. 3, H301;	
		STOT RE 2, H373;	
		Skin Corr. 1C, H314; Eye Dam. 1, H318;	
		Skin Sens. 1, H317; Aquatic Chronic 3, H412	
CAS: 108-95-2 EINECS: 203-632-7 Index number: 604-001-00-2	phenol		0.3%
		Acute Tox. 3, H301; Acute Tox. 3, H311; Acute Tox. 3, H331;	
		Muta. 2, H341; STOT RE 2, H373;	
		Skin Corr. 1B, H314 Specific concentration limits: Skin Corr. 1B; H314: C ≥ 3 % Skin Irrit. 2; H315: 1 % ≤ C < 3 % Eye Irrit. 2; H319: 1 % ≤ C < 3 %	

Additional Information:
For the wording of the listed hazard phrases refer to section 16.

SHIELDOKIT CONDUCTIVE GLUE (COMPONENT B) 3980

4. FIRST AID MEASURES

4.1 Description of first aid measures

After inhalation	Remove person to fresh air and keep comfortable for breathing. If feeling unwell: Call a POISON CENTRE or doctor.
After skin contact	Wash with plenty water. If skin irritation or rash occurs: Get medical advice or attention. Take off contaminated clothing and wash it before reuse.
After eye contact	Rinse cautiously with water for at least 30 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.
After swallowing	Rinse mouth. Do NOT induce vomiting. If symptoms persist consult doctor.

4.2 Most important symptoms and effects, both acute and delayed

If exposed to metal fumes, chills and fever-like symptoms may occur 4-12 hours after exposure.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing agents:	Use fire extinguishing methods suitable to surrounding conditions

5.2 Special hazards arising from the substance or mixture

The flu-like symptoms of metal fever may be delayed, occurring 4 to 12 hours after exposure. Inhalation of silver oxide fumes may cause metal fever and irritate the respiratory tract. Not flammable or combustible, but burns if involved in a fire. Produces irritating smoke of unknown toxicity in fires. Prevent fire-fighting wash from entering waterway or sewer system.
Inhalation of metal fumes may cause metal fever and irritate the respiratory tract.
Hazardous combustion products:
Carbon Oxides (COx)
Nitrogen Oxides (NOx)
toxic metal fumes

5.3 Advice for firefighters

Protective equipment:	Wear self-contained breathing apparatus and full fire-fighting turn-out gear.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Ensure adequate ventilation
Avoid breathing mist, spray, or vapors.

6.2 Environmental precautions:

Avoid release to the environment.
Do not allow to enter sewers/ surface or ground water.

6.3 Methods and material for containment and cleaning up:

Not readily flowable.
Collect in a sealable, chemical-resistant container.
Wipe the residues with a paper towel and place dirty towels in container.
Use soap and water to remove the last traces of residue.

6.4 Reference to other sections

See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

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SHIELDOKIT CONDUCTIVE GLUE (COMPONENT B) 3980

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Ensure good ventilation/exhaustion at the workplace.
Wear protective gloves and eye protection.
Wash hands and exposed skin thoroughly after handling.
Take off contaminated clothing and wash it before reuse.
Collect spillage.
Contaminated work clothing should not be allowed out of the workplace.
Avoid breathing fumes or dust.
Information about fire - and explosion protection: No special measures required.

7.2 Conditions for safe storage, including any incompatibilities

Storage:	
Requirements to be met by storerooms and receptacles	Keep in a dry and clean area, away from incompatible substances
Information about storage in one common storage facility	Not required.
Further information about storage conditions	Keep container tightly sealed.

7.3 Specific end use(s)

See section 1.2

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Ingredients with limit values that require monitoring at the workplace:	
	108-95-2 phenol
WEL	Short-term value: 16 mg/m³, 4 ppm Long-term value: 7.8 mg/m³, 2 ppm Sk

Additional information:
The lists valid during the making were used as basis.
Refer to the national or regional occupational exposure limit regulation for abbreviations and acronyms.

8.2 Exposure controls

Appropriate engineering controls No further data; see section 7.

Individual protection measures, such as personal protective equipment		
General protective and hygienic measures	Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing Wash hands before breaks and at the end of work. Avoid contact with the skin. Avoid contact with the eyes and skin.	
Respiratory protection	In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use self-contained respiratory protective device. Advice should be sought from respiratory protection specialists. If the product is heated or worker has a known allergic reaction, consider using a full mask with organic vapor cartridge or with an independent air supply.	
Hand protection	Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture. For Incidental Contact: Type = Nitrile ; Permeation 3 (> 360 min); Min. Thickness = 0.11 mm ; EN 374-2 The glove material has to be impermeable and resistant to the product/ the substance/ the preparation. Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation	 Protective gloves: EN374
Material of gloves	The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.	
Penetration time of glove material	The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.	

SHIELDOKIT CONDUCTIVE GLUE (COMPONENT B) 3980

Eye protection	Safety glasses or tightly sealed goggles

Wear safety glasses: EN 166

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	Solid
Form	Pasty
Colour	Silver grey
Odour	Amine-like
Odour threshold	Not available
Melting point/freezing point	Not available
Boiling point or initial boiling point and boiling range	Not available
Flammability	Non flammable
Lower and upper explosion limit	
Lower	Not applicable
Upper	Not applicable
Flash point	Not applicable.
Decomposition temperature	Not available
pH	Not applicable.
Viscosity:	
Kinematic viscosity	Not applicable.
Dynamic	Not applicable.
Solubility	
water	Insoluble.
Partition coefficient n-octanol/water (log value)	Not available
Vapour pressure	Not applicable.
Relative density at 20 °C	2.3
Vapour density (air=1):	Not applicable.
Particle characteristics	See section 3.

9.2 Other information

9.2.1 Information with regard to physical

hazard classes	Not applicable

9.2.2 Other safety characteristics

Evaporation rate	Not applicable.
Ignition temperature:	Product is not selfigniting.
Explosive properties:	Product does not present an explosion hazard.

Solvent content:	
Organic solvents:	1.10%
Solids content:	100.0 %

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SHIELDOKIT CONDUCTIVE GLUE (COMPONENT B) 3980

10. STABILITY AND REACTIVITY

10.1 Reactivity
Reacts exothermically with epoxide groups.

10.2 Chemical stability Chemically stable at normal temperatures and pressures.

Thermal decomposition / conditions to be avoided:	No decomposition if used according to specifications.

10.3 Possibility of hazardous reactions
No dangerous reactions known.

10.4 Conditions to avoid
No further relevant information available.

10.5 Incompatible materials:
Hydrogen peroxides

10.6 Hazardous decomposition products:
No dangerous decomposition products known.
Hazardous combustion products: see section 5.

11. TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008
Acute toxicity: Based on available data, the classification criteria are not met.

LD/LC50 values relevant for classification:

ATE (Acute Toxicity Estimates)		
Oral	LD50	62,333 mg/kg (rat)
7440-22-4 Silver (Powder)		
Oral	LD50	>2,000 mg/kg (rat)
Dermal	LD50	>2,000 mg/kg (rat)
Inhalative	LC50/4 h	≥ 5.16 mg/L /4 h (rat)
109-55-7 3-aminopropyldimethylamine		
Oral	LD50	1,870 mg/kg (rat)
Dermal	LD50	490 mg/kg (rabbit)
100-51-6 benzyl alcohol		
Oral	LD50	1,200 mg/kg (ATE) 1,230 mg/kg (rat)
Dermal	LD50	2,000 mg/kg (rabbit)
Inhalative	LC50/4 h	11 mg/L (ATE)
135108-88-2 Methyleneoxide, polymer with benzenamine,hydrogenated		
Oral	LD50	100 mg/kg (ATE)
108-95-2 phenol		
Oral	LD50	317 mg/kg (rat)
Dermal	LD50	850 mg/kg (rabbit)
Inhalative	LC50/4 h	0.5 mg/L (ATE)

Primary irritant effect

Skin corrosion/irritation	Causes skin irritation
Serious eye damage/irritation	Causes serious eye irritation
Respiratory or skin sensitisation	May cause an allergic skin reaction

Germ cell mutagenicity	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.

Reproductive toxicity	Based on available data, the classification criteria are not met.
STOT-single exposure	Based on available data, the classification criteria are not met.
STOT-repeated exposure	Based on available data, the classification criteria are not met.
Aspiration hazard	Based on available data, the classification criteria are not met.

Summary of Effects and Symptoms by Routes of Exposure	
Eyes	redness eye damage eye damage, pain
Skin	irritation rash, allergic contact dermatitis redness, irritation
Inhalation	Low toxicity: cough Inhalation of fumes may cause metal fever and irritate the respiratory tract. The flu-like symptoms of metal fume fever may be delayed, occurring 4–12 hours after exposure.
Swallowed	Low toxicity: abdominal discomfort

Additional toxicological information:

Delayed and immediate effects as well as chronic effects from short and long-term exposure	Prolonged or repeated exposure may cause skin allergies. Exposure to silver powder may also cause argyria, an irreversible blue-grey discoloration of the skin.

11.2 Information on other hazards

Endocrine disrupting properties	None of the ingredients is listed.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

Aquatic toxicity	Very toxic to aquatic life with long lasting effect. Avoid release to the environment. Collect spillage.

12.2 Persistence and degradability
No further relevant information available.

12.3 Bioaccumulative potential
No further relevant information available.

12.4 Mobility in soil
No further relevant information available.

12.5 Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

12.6 Endocrine disrupting properties
The product does not contain substances with endocrine disrupting properties.

12.7 Other adverse effects

Additional ecological information

General notes	Water hazard class 3 (German Regulation) (Self-assessment): extremely hazardous for water Do not allow product to reach ground water, water course or sewage system, even in small quantities. Must not reach sewage water or drainage ditch undiluted or unneutralised. Danger to drinking water if even extremely small quantities leak into the ground.

13. DISPOSAL CONSIDERATIONS

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SHIELDOKIT CONDUCTIVE GLUE (COMPONENT B) 3980

13.1 Waste treatment methods

Recommendation	This material and its container must be disposed of as hazardous waste.

European waste catalogue	
HP14	Ecotoxic

Uncleaned packaging:

Recommendation	Containers may still present a chemical hazard/ danger when empty. Dispose of contents in accordance with all local, regional, national, and international regulations. Where possible retain label warnings and SDS and observe all notices pertaining to the product.

14. TRANSPORT INFORMATION

14.1 UN number or ID number

ADR, IMDG, IATA	UN3077

14.2 UN proper shipping name

ADR	NOT REGULATED by road ADR Special Provision 375 for sizes 5 kg or less. ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver (Powder))
IMDG	NOT REGULATED for sea freight IMDG according to 2.10.2.7 for sizes up to 5 kg. ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Silver (Powder))
IATA	NOT REGULATED by Air IATA Special Provision A197 for sizes 5kg or less. Environmentally hazardous substance, solid, n.o.s. (Silver (Powder))

14.3 Transport hazard class(es)

ADR, IMDG	
Class	9 Miscellaneous dangerous substances and articles.
Label	9
IATA	
Class	9 Miscellaneous dangerous substances and articles.
Label	9

14.4 Packing group

ADR, IMDG, IATA	III

14.5 Environmental hazards:

Marine pollutant	MARINE POLLUTANT
Special marking (ADR)	ENVIRONMENTALLY HAZARDOUS
Special marking (IATA)	ENVIRONMENTALLY HAZARDOUS Symbol (fish and tree)

14.6 Special precautions for user Not applicable.

Marine pollutant:	90
EMS Number	F-A,S-F
Stowage Category	A
Stowage Code	SW23 When transported in BK3 bulk container, see 7.6.2.12 and 7.7.3.9.

14.7 Maritime transport in bulk according to

IMO instruments	Not applicable. 8331D-14G, 8331D-120G

ADR	
Limited quantities (LQ)	5 kg
Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30g Maximum net quantity per outer packaging:1000 g
Transport category	3
Tunnel restriction code	(-)

IMDG	
Limited quantities (LQ)	5 kg
Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 Maximum net quantity per outer packaging:1000 g
UN "Model Regulation":	UN 3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (SILVER (POWDER)), 9, III

15. REGULATORY INFORMATION

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

Poisons Act	
Regulated explosives precursors (Part 1)	None of the ingredients is listed.
Regulated poisons (Part 2)	108-95-2 phenol Listed
Reportable explosives precursors (Part 3)	None of the ingredients is listed.
Reportable poisons (Part 4)	108-95-2 phenol Listed

Directive 2012/18/EU	
Named dangerous substances- ANNEX I	None of the ingredients is listed.
Seveso category	E1 Hazardous to the Aquatic Environment
Qualifying quantity (tonnes) for the application of lower-tier requirements	100 t
Qualifying quantity (tonnes) for the application of upper-tier requirements	200 t
DIRECTIVE 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment – Annex II	None of the ingredients is listed.
Annex I- RESTRICTED EXPLOSIVES PRECURSORS (Upper limit value for the purpose of licensing under Article 5(3))	None of the ingredients is listed.
Annex II- REPORTABLE EXPLOSIVES PRECURSORS	None of the ingredients is listed.
Regulation (EC) No 273/2004 on drug precursors	None of the ingredients is listed.
Regulation (EC) No 111/2005 laying down rules for the monitoring of trade between the Community and third countries in drug precursors	None of the ingredients is listed.

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15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

16. OTHER INFORMATION

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Relevant phrases	
H226	Flammable liquid and vapour.
H301	Toxic if swallowed.
H302	Harmful if swallowed.
H311	Toxic in contact with skin.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
H331	Toxic if inhaled.
H332	Harmful if inhaled.
H341	Suspected of causing genetic defects.
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.
H412	Harmful to aquatic life with long lasting effects.

Classification according to Regulation (EC) No 1272/2008	
Skin corrosion/irritation Serious eye damage/irritation Skin sensitisation Hazardous to the aquatic environment-short-term (acute) aquatic hazard Hazardous to the aquatic environment - long-term (chronic) aquatic hazard	The classification of the mixture is generally based on the calculation method using substance data according to Regulation (EC) No 1272/2008.

Abbreviations and acronyms	
ADR	Accord relatif au transport international des marchandises dangereuses par route (European Agreement Concerning the International Carriage of Dangerous Goods by Road)
IMDG	International Maritime Code for Dangerous Goods
IATA	International Air Transport Association
GHS	Globally Harmonised System of Classification and Labelling of Chemicals
EINECS	European Inventory of Existing Commercial Chemical Substances
ELINCS	European List of Notified Chemical Substances
CAS	Chemical Abstracts Service (division of the American Chemical Society)
LC50	Lethal concentration, 50 percent
LD50	Lethal dose, 50 percent
PBT	Persistent, Bioaccumulative and Toxic
vPvB	very Persistent and very Bioaccumulative
ATE	Acute toxicity estimate values
Skin Irrit. 2	Skin corrosion/irritation – Category 2
Flam. Liq. 3	Flammable liquids – Category 3
Acute Tox. 3	Acute toxicity – Category 3
Acute Tox. 4	Acute toxicity – Category 4

SHIELDOKIT CONDUCTIVE GLUE (COMPONENT B) 3980

Skin Corr. 1B:	Skin corrosion/irritation – Category 1B
Skin Corr. 1C	Skin corrosion/irritation – Category 1C
Skin Irrit. 2	Skin corrosion/irritation – Category 2
Eye Dam. 1	Serious eye damage/eye irritation – Category 1
Skin Sens. 1	Skin sensitisation – Category 1
Skin Sens. 1B	Skin sensitisation – Category 1B
Muta. 2	Germ cell mutagenicity – Category 2
STOT RE 2	Specific target organ toxicity (repeated exposure) – Category 2
Aquatic Acute 1	Hazardous to the aquatic environment- acute aquatic hazard – Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment- long-term aquatic hazard – Category 1
Aquatic Chronic 3	Hazardous to the aquatic environment- long-term aquatic hazard – Category 3

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