Safety Data Sheet

acc. to Regulation (EC) No. 1907/2006 (REACH)

Miniature LCD Resin - Model

Version number: SDS 1.0 Date of compilation: 2022-08-11

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name: Miniature LCD Resin - Model

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

Relevant identified uses.: 3D printing resin

1.3 Details of the supplier of the safety data sheet

Formfutura BV
Tarweweg 3
6534 AM Nijmegen
Netherlands

e-mail: product.compliance@formfutura.com
Website: www.formfutura.com

e-mail (competent person): product.compliance@formfutura.com

1.4 Emergency telephone number

Emergency information service: +31 (0)85 743 4000
This number is only available during the following office hours: Mon-Fri 09:00 - 17:00

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification acc. to GHS

Section	Hazard class	Category	Hazard class and category	Hazard statement
3.3	serious eye damage/eye irritation	1	Eye Dam. 1	H318
3.4S	skin sensitisation	1	Skin Sens. 1	H317
3.9	specific target organ toxicity - repeated exposure	2	STOT RE 2	H373
4.1A	hazardous to the aquatic environment - acute hazard	1	Aquatic Acute 1	H400
4.1C	hazardous to the aquatic environment - chronic hazard	2	Aquatic Chronic 2	H411

For full text of abbreviations: see SECTION 16.

The most important adverse physicochemical, human health and environmental effects

Delayed or immediate effects can be expected after short or long-term exposure. Spillage and fire water can cause pollution of watercourses.

2.2 Label elements

Labelling

- Signal word: danger
- Pictograms

GHS05, GHS07, GHS08, GHS09

- Hazard statements

H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H373	May cause damage to organs through prolonged or repeated exposure.
H410	Very toxic to aquatic life with long lasting effects.

- Precautionary statements

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P103	Read carefully and follow all instructions.
P260	Do not breathe dust/fume/gas/mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection/face 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.
P501	Dispose of contents/container to hazardous or special waste collection point.

- Supplemental hazard information

EUH205	Contains epoxy constituents. May produce an allergic reaction.

Tactile warning of danger	yes
- Hazardous ingredients for labelling	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid, 4-(1-oxo-2-propenyl)-morpholine, phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide, hexamethylene diacrylate, 2,2-bis(acryloyloxymethyl)butyl acrylate, 2,2'-ethylenedioxydiethyl dimethacrylate, 4,4'-Isopropylodenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)

2.3 Other hazards

of no significance

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Not relevant (mixture)

3.2 Mixtures

Description of the mixture

Name of substance	Identifier		Wt%	Classification acc. to GHS
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	CAS No	55818-57-0	25 – < 50	Skin Sens. 1 / H317 Aquatic Acute 1 / H400 Aquatic Chronic 2 / H411
4-(1-oxo-2-propenyl)-morpholine	CAS No	5117-12-4	10 – < 25	Acute Tox. 4 / H302 Eye Dam. 1 / H318 Skin Sens. 1 / H317 STOT RE 2 / H373
hexamethylene diacrylate	CAS No	13048-33-4	5 – < 10	Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Skin Sens. 1 / H317 Aquatic Acute 1 / H400 Aquatic Chronic 2 / H411

Name of substance	Identifier	Wt%	Classification acc. to GHS
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	CAS No 162881-26-7	2 – < 5	Skin Sens. 1A / H317 Aquatic Acute 1 / H400 Aquatic Chronic 4 / H413
2,2'-ethylenedioxydiethyl dimethacrylate	CAS No 109-16-0	< 2	Skin Sens. 1B / H317
2,2-bis(acryloyloxymethyl)butyl acrylate	CAS No 15625-89-5	< 2	Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Skin Sens. 1 / H317 Aquatic Acute 1 / H400 Aquatic Chronic 1 / H410
4,4'-Isopropylodenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	CAS No 25068-38-6	< 2	Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Skin Sens. 1 / H317 Aquatic Chronic 2 / H411
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	CAS No 16096-31-4 933999-84-9	< 2	Skin Irrit. 2 / H315 Eye Irrit. 2 / H319 Skin Sens. 1 / H317 Aquatic Chronic 3 / H412

Name of substance	Specific Conc. Limits	M-Factors	ATE	Exposure route
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	-	M-factor (acute) = 10	-	
4-(1-oxo-2-propenyl)-morpholine	-	-	588 $^{mg}/_{kg}$	oral
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	-	M-factor (acute) = 10	-	
4,4'-Isopropylodenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane	Skin Irrit. 2; H315: C ≥ 5 % Eye Irrit. 2; H319: C ≥ 5 %	-	-	

For full text of abbreviations: see SECTION 16.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General notes

Do not leave affected person unattended. Remove victim out of the danger area. Keep affected person warm, still and covered. Take off immediately all contaminated clothing. In all cases of doubt, or when symptoms persist, seek medical advice. In case of unconsciousness place person in the recovery position. Never give anything by mouth.

Following inhalation

If breathing is irregular or stopped, immediately seek medical assistance and start first aid actions. Provide fresh air.

Following skin contact

Wash with plenty of soap and water.

Following eye contact

Remove contact lenses, if present and easy to do. Continue rinsing. Irrigate copiously with clean, fresh water for at least 10 minutes, holding the eyelids apart.

Following ingestion

Rinse mouth with water (only if the person is conscious). Do NOT induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms and effects are not known to date.

4.3 Indication of any immediate medical attention and special treatment needed

none

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing media

Water spray, BC-powder, Carbon dioxide (CO2)

Unsuitable extinguishing media

Water jet

5.2 Special hazards arising from the substance or mixture

Hazardous combustion products

Nitrogen oxides (NOx), Carbon monoxide (CO), Carbon dioxide (CO2)

5.3 Advice for firefighters

In case of fire and/or explosion do not breathe fumes. Co-ordinate firefighting measures to the fire surroundings. Do not allow firefighting water to enter drains or water courses. Collect contaminated firefighting water separately. Fight fire with normal precautions from a reasonable distance.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Remove persons to safety.

For emergency responders

Wear breathing apparatus if exposed to vapours/dust/spray/gases.

6.2 Environmental precautions

Keep away from drains, surface and ground water. Retain contaminated washing water and dispose of it. If substance has entered a water course or sewer, inform the responsible authority.

6.3 Methods and material for containment and cleaning up

Advice on how to contain a spill

Covering of drains

Advice on how to clean up a spill

Wipe up with absorbent material (e.g. cloth, fleece). Collect spillage: sawdust, kieselgur (diatomite), sand, universal binder

Appropriate containment techniques

Use of adsorbent materials.

Other information relating to spills and releases

Place in appropriate containers for disposal. Ventilate affected area.

6.4 Reference to other sections

Hazardous combustion products: see section 5. Personal protective equipment: see section 8. Incompatible materials: see section 10. Disposal considerations: see section 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Recommendations

- Measures to prevent fire as well as aerosol and dust generation

Use local and general ventilation. Use only in well-ventilated areas.

Advice on general occupational hygiene

Wash hands after use. Do not eat, drink and smoke in work areas. Remove contaminated clothing and protective equipment before entering eating areas. Never keep food or drink in the vicinity of chemicals. Never place chemicals in containers that are normally used for food or drink. Keep away from food, drink and animal feedingstuffs.

7.2 Conditions for safe storage, including any incompatibilities

- Packaging compatibilities

Only packagings which are approved (e.g. acc. to ADR) may be used.

7.3 Specific end use(s)

See section 16 for a general overview.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

This information is not available.

Relevant DNELs of components of the mixture

Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	DNEL	1.17 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	DNEL	33 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	DNEL	132.2 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	DNEL	132.2 mg/m³	human, inhalatory	worker (industry)	acute - systemic effects
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	DNEL	300 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	DNEL	300 mg/kg bw/day	human, dermal	worker (industry)	acute - systemic effects
hexamethylene diacrylate	13048-33-4	DNEL	24.5 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
hexamethylene diacrylate	13048-33-4	DNEL	2.77 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	DNEL	48.5 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	DNEL	13.9 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	DNEL	3.5 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects

Relevant DNELs of components of the mixture

Name of substance	CAS No	Endpoint	Threshold level	Protection goal, route of exposure	Used in	Exposure time
2,2-bis(acryloyloxy-methyl)butyl acrylate	15625-89-5	DNEL	83 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	DNEL	10.57 mg/m³	human, inhalatory	worker (industry)	chronic - systemic effects
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	DNEL	10.57 mg/m³	human, inhalatory	worker (industry)	acute - systemic effects
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	DNEL	0.44 mg/m³	human, inhalatory	worker (industry)	chronic - local effects
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	DNEL	6 mg/kg bw/day	human, dermal	worker (industry)	chronic - systemic effects
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	DNEL	22.6 µg/cm²	human, dermal	worker (industry)	chronic - local effects
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	DNEL	22.6 µg/cm²	human, dermal	worker (industry)	acute - local effects

Relevant PNECs of components of the mixture

Name of substance	CAS No	Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	PNEC	0.025 $^{mg}/_{l}$	aquatic organisms	freshwater	short-term (single instance)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	PNEC	0.003 $^{mg}/_{l}$	aquatic organisms	marine water	short-term (single instance)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	PNEC	10 $^{mg}/_{l}$	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	PNEC	8.96 $^{mg}/_{kg}$	aquatic organisms	freshwater sediment	short-term (single instance)

Relevant PNECs of components of the mixture

Name of substance	CAS No	Endpoint	Threshold level	Organism	Environmental compartment	Exposure time
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	PNEC	0.896 $^{mg}/_{kg}$	aquatic organisms	marine sediment	short-term (single instance)
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	PNEC	1.78 $^{mg}/_{kg}$	terrestrial organisms	soil	short-term (single instance)
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	PNEC	0.012 $^{mg}/_{l}$	aquatic organisms	freshwater	short-term (single instance)
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	PNEC	0.009 $^{mg}/_{kg}$	aquatic organisms	freshwater sediment	short-term (single instance)
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	PNEC	0.001 $^{mg}/_{kg}$	terrestrial organisms	soil	short-term (single instance)
hexamethylene diacrylate	13048-33-4	PNEC	0.007 $^{mg}/_{l}$	aquatic organisms	freshwater	short-term (single instance)
hexamethylene diacrylate	13048-33-4	PNEC	0.001 $^{mg}/_{l}$	aquatic organisms	marine water	short-term (single instance)
hexamethylene diacrylate	13048-33-4	PNEC	2.7 $^{mg}/_{l}$	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
hexamethylene diacrylate	13048-33-4	PNEC	0.493 $^{mg}/_{kg}$	aquatic organisms	freshwater sediment	short-term (single instance)
hexamethylene diacrylate	13048-33-4	PNEC	0.049 $^{mg}/_{kg}$	aquatic organisms	marine sediment	short-term (single instance)
hexamethylene diacrylate	13048-33-4	PNEC	0.094 $^{mg}/_{kg}$	terrestrial organisms	soil	short-term (single instance)
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	PNEC	0.016 $^{mg}/_{l}$	aquatic organisms	freshwater	short-term (single instance)
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	PNEC	0.002 $^{mg}/_{l}$	aquatic organisms	marine water	short-term (single instance)
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	PNEC	1.7 $^{mg}/_{l}$	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	PNEC	0.185 $^{mg}/_{kg}$	aquatic organisms	freshwater sediment	short-term (single instance)
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	PNEC	0.018 $^{mg}/_{kg}$	aquatic organisms	marine sediment	short-term (single instance)
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	PNEC	0.027 $^{mg}/_{kg}$	terrestrial organisms	soil	short-term (single instance)
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	PNEC	0.87 $^{µg}/_{l}$	aquatic organisms	freshwater	short-term (single instance)
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	PNEC	0.087 $^{µg}/_{l}$	aquatic organisms	marine water	short-term (single instance)
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	PNEC	6.25 $^{mg}/_{l}$	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	PNEC	0.017 $^{mg}/_{kg}$	aquatic organisms	freshwater sediment	short-term (single instance)

Relevant PNECs of components of the mixture						
Name of substance	**CAS No**	**Endpoint**	**Threshold level**	**Organism**	**Environmental compartment**	**Exposure time**
2,2-bis(acryloyloxy-methyl)butyl acrylate	15625-89-5	PNEC	0.002 $^{mg}/_{kg}$	aquatic organisms	marine sediment	short-term (single instance)
2,2-bis(acryloyloxy-methyl)butyl acrylate	15625-89-5	PNEC	0.003 $^{mg}/_{kg}$	terrestrial organisms	soil	short-term (single instance)
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	PNEC	0.011 $^{mg}/_{l}$	aquatic organisms	freshwater	short-term (single instance)
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	PNEC	0.001 $^{mg}/_{l}$	aquatic organisms	marine water	short-term (single instance)
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	PNEC	1 $^{mg}/_{l}$	aquatic organisms	sewage treatment plant (STP)	short-term (single instance)
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	PNEC	0.283 $^{mg}/_{kg}$	aquatic organisms	freshwater sediment	short-term (single instance)
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	PNEC	0.028 $^{mg}/_{kg}$	aquatic organisms	marine sediment	short-term (single instance)
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	PNEC	0.223 $^{mg}/_{kg}$	terrestrial organisms	soil	short-term (single instance)

8.2 Exposure controls

Appropriate engineering controls

General ventilation.

Individual protection measures (personal protective equipment)

Eye/face protection

Wear eye/face protection.

Skin protection

- Hand protection

Wear suitable gloves. Chemical protection gloves are suitable, which are tested according to EN 374. Check leak-tightness/impermeability prior to use. In the case of wanting to use the gloves again, clean them before taking off and air them well. For special purposes, it is recommended to check the resistance to chemicals of the protective gloves mentioned above together with the supplier of these gloves.

- Type of material

NBR: acrylonitrile-butadiene rubber

- Material thickness

≥0,6mm

- Breakthrough times of the glove material

>480 minutes (permeation: level 6)

- Other protection measures

Take recovery periods for skin regeneration. Preventive skin protection (barrier creams/ointments) is recommended. Wash hands thoroughly after handling.

Respiratory protection

In case of inadequate ventilation wear respiratory protection.

Environmental exposure controls

Use appropriate container to avoid environmental contamination. Keep away from drains, surface and ground water.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Physical state	liquid
Colour	grey
Odour	characteristic
Melting point/freezing point	not determined
Boiling point or initial boiling point and boiling range	98.82 °C at 0.71 mbar
Flammability	this material is combustible, but will not ignite readily
Lower and upper explosion limit	not determined
Flash point	not determined
Auto-ignition temperature	235 °C (auto-ignition temperature (liquids and gases))
Decomposition temperature	not relevant
PH (value)	6 – 8 (in aqueous solution: 100 % ($^{w}/_{w}$))
Kinematic viscosity	not determined
Solubility(ies)	not determined
Partition coefficient	
Partition coefficient n-octanol/water (log value)	this information is not available
Vapour pressure	0.001 hPa at 20 °C
Density and/or relative density	
Density	1.1 $^{g}/_{cm^3}$ at 25 °C
Relative vapour density	information on this property is not available
Particle characteristics	not relevant (liquid)

9.2 Other information

Information with regard to physical hazard classes	hazard classes acc. to GHS (physical hazards): not relevant
Other safety characteristics	there is no additional information

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Concerning incompatibility: see below "Conditions to avoid" and "Incompatible materials".

If heated:

Exothermic polymerisation

If exposed to light:

Exothermic polymerisation.

10.2 Chemical stability

See below "Conditions to avoid".

10.3 Possibility of hazardous reactions

No known hazardous reactions.

10.4 Conditions to avoid

UV-radiation/sunlight.

10.5 Incompatible materials

Oxidisers, Reducing agents

10.6 Hazardous decomposition products

Reasonably anticipated hazardous decomposition products produced as a result of use, storage, spill and heating are not known. Hazardous combustion products: see section 5.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Test data are not available for the complete mixture.

Classification procedure

The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

Classification acc. to GHS

Acute toxicity

Shall not be classified as acutely toxic.

GHS of the United Nations, annex 4: May be harmful if swallowed.

Acute toxicity estimate (ATE) of components of the mixture			
Name of substance	**CAS No**	**Exposure route**	**ATE**
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	oral	588 $^{mg}/_{kg}$

Skin corrosion/irritation

Shall not be classified as corrosive/irritant to skin.

Serious eye damage/eye irritation

Causes serious eye damage.

Respiratory or skin sensitisation

May cause an allergic skin reaction.

Germ cell mutagenicity

Shall not be classified as germ cell mutagenic.

Carcinogenicity

Shall not be classified as carcinogenic.

Reproductive toxicity

Shall not be classified as a reproductive toxicant.

Specific target organ toxicity - single exposure

Shall not be classified as a specific target organ toxicant (single exposure).

Specific target organ toxicity - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

Shall not be classified as presenting an aspiration hazard.

11.2 Information on other hazards

There is no additional information.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Very toxic to aquatic life with long lasting effects.

Aquatic toxicity (acute) of components of the mixture

Name of substance	CAS No	Endpoint	Value	Species	Exposure time
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	LL50	>100 mg/l	fish	96 h
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	LC50	>0.082 mg/l	fish	96 h
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	EC50	>16 mg/l	aquatic invertebrates	48 h
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	EL50	105 mg/l	algae	72 h
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	ErC50	17 mg/l	algae	72 h
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	LC50	>220 mg/l	fish	24 h
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	EC50	230 mg/l	aquatic invertebrates	24 h
4-(1-oxo-2-propenyl)-morpholine	5117-12-4	ErC50	>120 mg/l	algae	72 h
hexamethylene diacrylate	13048-33-4	LC50	0.38 mg/l	fish	96 h
hexamethylene diacrylate	13048-33-4	EC50	8.3 mg/l	aquatic invertebrates	24 h
hexamethylene diacrylate	13048-33-4	ErC50	2.33 mg/l	algae	72 h
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	LC50	>90 µg/l	fish	96 h
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	EC50	>1,175 µg/l	aquatic invertebrates	48 h
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	ErC50	>260 µg/l	algae	72 h
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	LC50	23.1 mg/l	fish	24 h
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	ErC50	>100 mg/l	algae	72 h
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	EC50	72.8 mg/l	algae	72 h
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	LC50	0.87 mg/l	fish	96 h
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	ErC50	4.86 mg/l	algae	96 h
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	EC50	7.2 mg/l	algae	72 h

Aquatic toxicity (acute) of components of the mixture					
Name of substance	**CAS No**	**Endpoint**	**Value**	**Species**	**Exposure time**
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	LC50	30 $^{mg}/_{l}$	fish	96 h
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	EC50	23.1 $^{mg}/_{l}$	algae	48 h

Aquatic toxicity (chronic) of components of the mixture					
Name of substance	**CAS No**	**Endpoint**	**Value**	**Species**	**Exposure time**
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	EC50	>1,000 $^{mg}/_{l}$	microorganisms	3 h
hexamethylene diacrylate	13048-33-4	LC50	0.47 $^{mg}/_{l}$	aquatic invertebrates	21 d
hexamethylene diacrylate	13048-33-4	EC50	0.15 $^{mg}/_{l}$	aquatic invertebrates	21 d
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	EC50	>100 $^{mg}/_{l}$	microorganisms	3 h
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	EC50	51.9 $^{mg}/_{l}$	aquatic invertebrates	21 d

12.2 Persistence and degradability

Degradability of components of the mixture						
Name of substance	**CAS No**	**Process**	**Degradation rate**	**Time**	**Method**	**Source**
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0	oxygen depletion	42 %	28 d		ECHA
hexamethylene diacrylate	13048-33-4	carbon dioxide generation	60 – 70 %	28 d		ECHA
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	carbon dioxide generation	1 %	29 d		ECHA
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0	carbon dioxide generation	85 %	28 d		ECHA
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5	carbon dioxide generation	82 – 90 %	28 d		ECHA
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	oxygen depletion	47 %	28 d		ECHA

12.3 Bioaccumulative potential

Data are not available.

Bioaccumulative potential of components of the mixture

Name of substance	CAS No	BCF	Log KOW	BOD5/COD
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid	55818-57-0		1.6 – 3.8 (pH value: 6.4, 23 °C)	
4-(1-oxo-2-propenyl)-morpholine	5117-12-4		-0.46 (21 °C)	
hexamethylene diacrylate	13048-33-4		2.81 (25 °C)	
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide	162881-26-7	<5	5.8 (pH value: 8.3, 22 °C)	
2,2'-ethylenedioxydiethyl dimethacrylate	109-16-0		2.3	
2,2-bis(acryloyloxymethyl)butyl acrylate	15625-89-5		4.35	
Reaction products of hexane-1,6-diol with 2-(chloromethyl)oxirane (1:2)	16096-31-4 933999-84-9	3.57	0.822 (20 °C)	

12.4 Mobility in soil

Data are not available.

12.5 Results of PBT and vPvB assessment

Data are not available.

12.6 Endocrine disrupting properties

None of the ingredients are listed.

12.7 Other adverse effects

Data are not available.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Sewage disposal-relevant information

Do not empty into drains. Avoid release to the environment. Refer to special instructions/safety data sheets.

Waste treatment of containers/packagings

It is a dangerous waste; only packagings which are approved (e.g. acc. to ADR) may be used. Completely emptied packages can be recycled. Handle contaminated packages in the same way as the substance itself.

Remarks

Please consider the relevant national or regional provisions. Waste shall be separated into the categories that can be handled separately by the local or national waste management facilities.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number or ID number

ADR/RID/ADN	UN 3082
IMDG-Code	UN 3082
ICAO-TI	UN 3082

14.2 UN proper shipping name

ADR/RID/ADN	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.
IMDG-Code	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.

ICAO-TI	Environmentally hazardous substance, liquid, n.o.s.
Technical name (hazardous ingredients)	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid, hexamethylene diacrylate

14.3 Transport hazard class(es)

ADR/RID/ADN	9
IMDG-Code	9
ICAO-TI	9

14.4 Packing group

ADR/RID/ADN	III
IMDG-Code	III
ICAO-TI	III

14.5 Environmental hazards hazardous to the aquatic environment

Environmentally hazardous substance (aquatic environment)	4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid, hexamethylene diacrylate

14.6 Special precautions for user

Provisions for dangerous goods (ADR) should be complied within the premises.

14.7 Maritime transport in bulk according to IMO instruments

The cargo is not intended to be carried in bulk.

14.8 Information for each of the UN Model Regulations

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) - Additional information

Classification code	M6
Danger label(s)	9, fish and tree

Environmental hazards	yes (hazardous to the aquatic environment)
Special provisions (SP)	274, 335, 375, 601
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3
Tunnel restriction code (TRC)	-
Hazard identification No	90
Emergency Action Code	3Z

Regulations concerning the International Carriage of Dangerous Goods by Rail (RID) - Additional information

Classification code	M6
Danger label(s)	9, fish and tree

Environmental hazards	yes (hazardous to water)
Special provisions (SP)	274, 335, 375, 601
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
Transport category (TC)	3

Hazard identification No	90

International Maritime Dangerous Goods Code (IMDG) - Additional information

Marine pollutant	yes (hazardous to the aquatic environment) (4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid)
Danger label(s)	9, fish and tree

Special provisions (SP)	274, 335, 969
Excepted quantities (EQ)	E1
Limited quantities (LQ)	5 L
EmS	F-A, S-F
Stowage category	A

International Civil Aviation Organization (ICAO-IATA/DGR) - Additional information

Environmental hazards	yes (hazardous to the aquatic environment)
Danger label(s)	9, fish and tree

Special provisions (SP)	A97, A158, A197, A215
Excepted quantities (EQ)	E1
Limited quantities (LQ)	30 kg

SECTION 15: REGULATORY INFORMATION

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

Relevant provisions of the European Union (EU)

Seveso Directive

2012/18/EU (Seveso III)

No	Dangerous substance/hazard categories	Qualifying quantity (tonnes) for the application of lower and upper-tier requirements		Notes
E1	environmental hazards (hazardous to the aquatic environment, cat. 1)	100	200	56)

Notation

56) hazardous to the Aquatic Environment in category Acute 1 or Chronic 1

Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

none of the ingredients are listed

Regulation concerning the establishment of a European Pollutant Release and Transfer Register (PRTR)

none of the ingredients are listed

Water Framework Directive (WFD)

List of pollutants (WFD)

Name of substance	CAS No	Listed in	Remarks
2,2-bis(acryloyloxymethyl)butyl acrylate		a)	
4,4'-Isopropylidenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane, esters with acrylic acid		a)	

List of pollutants (WFD)			
Name of substance	**CAS No**	**Listed in**	**Remarks**
phenyl bis(2,4,6-trimethylbenzoyl)-phosphine oxide		a)	
4,4'-Isopropylodenediphenol, oligomeric reaction products with 1-chloro-2,3-epoxypropane		a)	
Reaction products of hexane-1,6-diol with 2-(chloro-methyl)oxirane (1:2)		a)	

Legend
A) Indicative list of the main pollutants

Regulation on persistent organic pollutants (POP)

None of the ingredients are listed.

15.2 Chemical Safety Assessment

Chemical safety assessments for substances in this mixture were not carried out.

SECTION 16: OTHER INFORMATION

Abbreviations and acronyms

Abbr.	Descriptions of used abbreviations
Acute Tox.	Acute toxicity
ADR	Accord relatif au transport international des marchandises dangereuses par route (Agreement concerning the International Carriage of Dangerous Goods by Road)
ADR/RID/ADN	Agreements concerning the International Carriage of Dangerous Goods by Road/Rail/Inland Waterways (ADR/RID/ADN)
Aquatic Acute	Hazardous to the aquatic environment - acute hazard
Aquatic Chronic	Hazardous to the aquatic environment - chronic hazard
ATE	Acute Toxicity Estimate
BCF	Bioconcentration factor
BOD	Biochemical Oxygen Demand
CAS	Chemical Abstracts Service (service that maintains the most comprehensive list of chemical substances)
COD	Chemical oxygen demand
DGR	Dangerous Goods Regulations (see IATA/DGR)
DNEL	Derived No-Effect Level
EC50	Effective Concentration 50 %. The EC50 corresponds to the concentration of a tested substance causing 50 % changes in response (e.g. on growth) during a specified time interval
EL50	Effective Loading 50 %: the EL50 corresponds to the loading rate required to produce a response in 50% of the test organisms
EmS	Emergency Schedule
ErC50	≡ EC50: in this method, that concentration of test substance which results in a 50 % reduction in either growth (EbC50) or growth rate (ErC50) relative to the control
Eye Dam.	Seriously damaging to the eye
Eye Irrit.	Irritant to the eye
GHS	"Globally Harmonized System of Classification and Labelling of Chemicals" developed by the United Nations
IATA	International Air Transport Association
IATA/DGR	Dangerous Goods Regulations (DGR) for the air transport (IATA)

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Abbr.	Descriptions of used abbreviations
ICAO	International Civil Aviation Organization
ICAO-TI	Technical instructions for the safe transport of dangerous goods by air
IMDG	International Maritime Dangerous Goods Code
IMDG-Code	International Maritime Dangerous Goods Code
LC50	Lethal Concentration 50%: the LC50 corresponds to the concentration of a tested substance causing 50 % lethality during a specified time interval
LL50	Lethal Loading 50 %: the LL50 corresponds to the loading rate causing 50 % lethality
log KOW	n-Octanol/water
M-factor	Means a multiplying factor. It is applied to the concentration of a substance classified as hazardous to the aquatic environment acute category 1 or chronic category 1, and is used to derive by the summation method the classification of a mixture in which the substance is present
PBT	Persistent, Bioaccumulative and Toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire des marchandises Dangereuses (Regulations concerning the International carriage of Dangerous goods by Rail)
Skin Corr.	Corrosive to skin
Skin Irrit.	Irritant to skin
Skin Sens.	Skin sensitisation
STOT RE	Specific target organ toxicity - repeated exposure
vPvB	Very Persistent and very Bioaccumulative

Key literature references and sources for data

Agreement concerning the International Carriage of Dangerous Goods by Road (ADR). Regulations concerning the International Carriage of Dangerous Goods by Rail (RID). International Maritime Dangerous Goods Code (IMDG). Dangerous Goods Regulations (DGR) for the air transport (IATA).

Classification procedure

Physical and chemical properties: The classification is based on tested mixture.
Health hazards, Environmental hazards: The method for classification of the mixture is based on ingredients of the mixture (additivity formula).

List of relevant phrases (code and full text as stated in section 2 and 3)

Code	Text
H302	Harmful if swallowed.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H319	Causes serious eye irritation.
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.

Code	Text
H413	May cause long lasting harmful effects to aquatic life.

Disclaimer

This information is based upon the present state of our knowledge. This SDS has been compiled and is solely intended for this product.

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