Manufacturer:
Covestro

Product Name:
Covestro Desolite® 3471-2-136 Secondary Optical Fiber Coating, UV Cure (10 kg)

Manufacturer Part Number:
COV-3471-2-136-10KG

Safety Data Sheet according to Regulation (EU) No. 1907/2006 as amended

DeSolite 3471-2-136

Version 4.0 Revision Date 28.07.2025 Print Date 29.07.2025

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

1.1 Product identifier

DESOLITE 3471-2-136

Material number: 50025034

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

Use:
UV-curable coatings, inks and matrix materials.
For details of the identified uses according to REACH-Regulation (EU) No. 1907/2006 refer to the annex of this safety data sheet.

1.3 Details of the supplier of the safety data sheet

Covestro Deutschland AG
COV Global Product Safety
51365 Leverkusen

Tel.: +49 214 6009 8134
Email: ProductSafetyEMLA@covestro.com

1.4 Emergency telephone number

+1-703-527-3887 (Chemtrec)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Sensitization of the skin, Category 1 (H317)
Reproductive toxicity, Category 1B (H360Fd)
Specific target organ toxicity (single exposure), Category 3 (H335 (Respiratory system))
Chronically hazardous to the aquatic environment, Category 2 (H411)

2.2 Label elements

Danger

Hazardous components which must be listed on the label
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
2-phenoxyethyl acrylate
hexamethylene diacrylate
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
2-hydroxyethyl acrylate

Hazard statements:
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H360Fd May damage fertility. Suspected of damaging the unborn child.

H411 Toxic to aquatic life with long lasting effects.

Precautionary statements:
P201 Obtain special instructions before use.
P261 Avoid breathing mist or vapours.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P391 Collect spillage.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

Type of product: Mixture

3.2 Mixtures

optical fiber coatings

Hazardous components

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Concentration [wt.-%]: >= 25 - < 50
EC-No.: 500-130-2
REACH Registration Number: 01-2119490020-53-0014, 01-2119490020-53-0007
CAS-No.: 55818-57-0
Classification (1272/2008/CE): Skin Sens. 1 H317 Aquatic Chronic 2 H411

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Concentration [wt.-%]: >= 10 - < 20
Index-No.: 607-133-00-9
EC-No.: 227-561-6
REACH Registration Number: 01-2119957862-25
CAS-No.: 5888-33-5
Classification (1272/2008/CE): Skin Sens. 1A H317 Aquatic Acute 1 H400 Aquatic Chronic 1 H410
Specific threshold concentration (GHS):
STOT SE 3 H335 >= 10 %
M-factor (acute aquat. tox.): 1
M-factor (chron. aquat. tox.): 1

2-phenoxyethyl acrylate
Concentration [wt.-%]: >= 5 - < 10
EC-No.: 256-360-6
REACH Registration Number: 01-2119980532-35-0014, 01-2119980532-35-0013
Classification (1272/2008/CE): Skin Sens. 1A H317 Repr. 2 H361d Aquatic Chronic 2 H411

hexamethylene diacrylate
Concentration [wt.-%]: >= 5 - < 10
Index-No.: 607-109-00-8
EC-No.: 235-921-9
REACH Registration Number: 01-2119484737-22-0025, 01-2119484737-22-0008
CAS-No.: 13048-33-4
Classification (1272/2008/CE): Skin Irrit. 2 H315 Eye Irrit. 2 H319 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 2 H411
M-factor (acute aquat. tox.): 1

Hydroxycyclohexyl phenyl ketone
Concentration [wt.-%]: >= 1 - < 2,5
EC-No.: 213-426-9
CAS-No.: 947-19-3
Classification (1272/2008/CE): Aquatic Chronic 3 H412

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Concentration [wt.-%]: >= 1 - < 2,5
EC-No.: 278-355-8
CAS-No.: 75980-60-8
Classification (1272/2008/CE): Skin Sens. 1B H317 Repr. 1B H360Fd Aquatic Chronic 2 H411

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Concentration [wt.-%]: >= 0,3 - < 1
CAS-No.: 54687-25-1
Classification (1272/2008/CE): Skin Irrit. 2 H315 Skin Sens. 1 H317 Aquatic Chronic 3 H412

Butylated Hydroxy Toluene (BHT)
Concentration [wt.-%]: >= 0,1 - < 0,25
EC-No.: 204-881-4
REACH Registration Number: 01-2119555270-46
CAS-No.: 128-37-0
Classification (1272/2008/CE): Aquatic Acute 1 H400 Aquatic Chronic 1 H410
M-factor (acute aquat. tox.): 1
M-factor (chron. aquat. tox.): 1

2-hydroxyethyl acrylate
Concentration [wt.-%]: >= 0,1 - < 0,2
Index-No.: 607-072-00-8
EC-No.: 212-454-9
REACH Registration Number: 01-2119459345-34
CAS-No.: 818-61-1
Classification (1272/2008/CE): Acute Tox. 4 Oral H302 Acute Tox. 3 Dermal H311 Skin Corr. 1B H314 Eye Dam. 1 H318 Skin Sens. 1 H317 Aquatic Acute 1 H400 Aquatic Chronic 3 H412
Specific threshold concentration (GHS):

Skin Sens. 1	H317	>= 0,2 %

M-factor (acute aquat. tox.): 1
ATE (oral): 540 mg/kg
ATE (dermal): 300 mg/kg

Candidate List of Substances of Very High Concern for Authorisation
This product contains substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 59).

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
CAS-No.: 75980-60-8

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice: Take off all contaminated clothing immediately.

For effective first-aid, special training / education is needed.

If inhaled: Take the person into the fresh air and keep him warm, let him rest; if there is difficulty in breathing, medical advice is required. If unconscious, place in recovery position and seek medical advice. Oxygen or artificial respiration if needed. If breathing is irregular or stopped, administer artificial respiration. Keep respiratory tract clear. Consult a physician if necessary.

Inhalation may provoke the following symptoms: respiratory tract irritation coughing

In the case of hazardous fumes, wear self contained breathing apparatus.

In case of skin contact: In case of skin contact wash affected areas thoroughly with soap and plenty of water. Wash off immediately with plenty of water for at least 15 minutes. Take off contaminated clothing and shoes immediately. Wash contaminated clothing before re-use. Thoroughly clean shoes before reuse. Consult a doctor in the event of a skin reaction.

Most important symptoms Skin irritation Redness

In case of eye contact: Hold the eyes open and rinse with preferably lukewarm water for a sufficiently long period of time (at least 10 minutes). Contact an ophthalmologist. Remove contact lenses.

Eye contact may provoke the following symptoms irritant effects eye redness

If swallowed: Do not induce vomiting without medical advice. Rinse mouth. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If a person vomits when lying on his back, place him in the recovery position. Never give anything by mouth to an unconscious person.

If victim is conscious: Give small amounts of water to drink.

If symptoms persist, call a physician or Poison Control Centre immediately.

4.2 Most important symptoms and effects, both acute and delayed

Notes to physician: Treat symptomatically.

4.3 Indication of any immediate medical attention and special treatment needed

Therapeutic measures: No information available.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media: Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

5.2 Special hazards arising from the substance or mixture

Formation of carbon monoxide, carbon dioxide and other toxic gases in the event of fire or during thermal decomposition. Fire will produce dense black smoke containing hazardous combustion products (see section 10). In case of fire, may produce hazardous decomposition products such as: Acrylate monomers Aldehydes Organic acids

In the event of fire and/or explosion do not breathe fumes. Cool endangered vessels and containers with sprayed water. Heating raises pressure with consequent risk of bursting and explosion.

5.3 Advice for fire-fighters

Wear an approved positive pressure self-contained breathing apparatus in addition to standard fire fighting gear.

Do not allow contaminated extinguishing water to enter the soil, ground-water or surface waters. Immediately evacuate personnel to safe areas.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Immediately evacuate personnel to safe areas. Avoid breathing mist or vapours. Put on protective equipment (see section 8). Ensure adequate ventilation/exhaust extraction. Keep unauthorized persons away. In case of insufficient ventilation, wear suitable respiratory equipment.

6.2 Environment related measures

Do not allow to escape into waterways, wastewater or soil. If the product contaminates rivers and lakes or drains inform respective authorities. Inform the responsible authorities in case of gas leakage, or of entry into waterways, soil or drains. Collect spillage. In some cases, fume scrubbers, filters or engineering modifications

to the process equipment will be necessary to reduce emissions to acceptable levels.

6.3 Methods and material for containment and cleaning up

Soak up with inert absorbent material and dispose of as hazardous waste. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Dispose of wastes in an approved waste disposal facility. Do not discharge large quantities of concentrated spills or residues into surface water or sanitary sewer system.

6.4 Reference to other sections

For personal protection see section 8. For further disposal measures see section 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

General conditions of use are further specified in the annex according to REACH-Regulation (EU) No. 1907/2006.

For personal protection see section 8. Avoid contact with skin, eyes and clothing. Do not breathe mist or vapours. Do not ingest. Ensure adequate ventilation and, if necessary, exhaust ventilation when handling or transferring the product. In case of insufficient ventilation, wear suitable respiratory equipment. The precautions required in the handling of acrylic acid esters must be taken. Do not re-use empty containers.

Smoking, eating and drinking should be prohibited in the application area. Wash skin thoroughly after handling. Remove contaminated clothing and protective equipment before entering eating areas.

Persons who suffer from skin complaints or other hypersensitivity reactions of skin should not work with the product.

The personal protective measures described in section 8 must be observed. Avoid contact with skin and eyes absolutely.

Keep away from foodstuffs, drinks and tobacco. Wash hands before breaks and at end of work and use skin-protecting ointment. Keep working clothes separately. Change contaminated or soaked clothing immediately.

7.2 Conditions for safe storage, including any incompatibilities

Keep container dry and tightly closed in a cool and well ventilated place. Store in original container. Protect against heat and direct sunlight. Store locked up. When not in use, keep containers tightly closed. Keep in properly labelled containers. Use appropriate container to avoid environmental contamination. Polymerisation is a highly exothermic reaction and may generate sufficient heat to cause thermal decomposition and/or rupture containers. Inhibitor only effective in the presence of oxygen.

Storage class (TRGS 510) : 6.1C: Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects

Recommended storage temperature: 15 - 30 °C

7.3 Specific end use(s)

UV-curable coatings, inks and matrix materials.

SECTION 8: Exposure controls/personal protection

Risk management measures are further specified in the annex according to REACH-Regulation (EU) No. 1907/2006.

8.1 Control parameters

Components with workplace control parameters

Substance	CAS-No.	Basis	Type	Value	Ceiling Limit Value	Remarks
Butylated Hydroxy Toluene (BHT)	128-37-0	TRGS 900	STEL CL			Category II: substances with a resorptive effect.
Butylated Hydroxy Toluene (BHT)	128-37-0	TRGS 900		10 mg/m3	4	Y
Butylated Hydroxy Toluene (BHT)	128-37-0	TRGS 900				Listed

Derived No Effect Level (DNEL)

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	1,17 mg/m3	Repeated dose toxicity oral
Workers	Inhalation	Acute systemic effects		No hazard identified Most sensitive endpoint: Acute toxicity (By inhalation)
Workers	Inhalation	Long-term local effects		No hazard identified Most sensitive endpoint: Repeated dose toxicity
Workers	Inhalation	Acute local effects		No hazard identified Most sensitive endpoint: Acute toxicity
Workers	Dermal	Long-term systemic effects	33 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity oral
Workers	Dermal	Acute systemic effects		No hazard identified
Workers	Dermal	Long-term local effects		Medium hazard (no threshold derived) Most sensitive endpoint: Sensitisation (skin)
Workers	Dermal	Acute local effects		No hazard identified Most sensitive endpoint: skin irritation/corrosion
Workers	Eye contact	Local effects		No hazard identified
Consumers	Inhalation	Long-term systemic effects		No hazard identified
Consumers	Inhalation	Acute systemic effects		No hazard identified
Consumers	Inhalation	Long-term local effects		No hazard identified
Consumers	Inhalation	Acute local effects		No hazard identified
Consumers	Dermal	Long-term systemic effects		No hazard identified
Consumers	Dermal	Acute systemic effects		No hazard identified
Consumers	Dermal	Long-term local effects		No hazard identified
Consumers	Dermal	Acute local effects		No hazard identified
Consumers	Oral	Long-term systemic effects		No hazard identified
Consumers	Oral	Acute systemic effects		No hazard identified

Consumers	Eye contact	Local effects		No hazard identified

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Dermal	Long-term systemic effects	1,39 mg/kg bw/day	
Consumers	Dermal	Long-term systemic effects	0,83 mg/kg bw/day	
Consumers	Oral	Long-term systemic effects	0,83 mg/kg bw/day	

2-phenoxyethyl acrylate

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	12 mg/m3	Most sensitive endpoint: Repeated dose toxicity
Workers	Inhalation	Acute systemic effects		Hazard unknown (no further information necessary)
Workers	Inhalation	Long-term local effects	77 mg/m3	Most sensitive endpoint: Repeated dose toxicity
Workers	Inhalation	Acute local effects		Hazard unknown (no further information necessary)
Workers	Dermal	Long-term systemic effects	3,5 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity
Workers	Dermal	Acute systemic effects		No hazard identified
Workers	Dermal	Long-term local effects		No hazard identified
Workers	Dermal	Acute local effects		High hazard (no threshold derived)
Workers	Eye contact	Local effects		No hazard identified
Consumers	Inhalation	Long-term systemic effects		No hazard identified
Consumers	Inhalation	Acute systemic effects		No hazard identified
Consumers	Inhalation	Long-term local effects		No hazard identified
Consumers	Inhalation	Acute local effects		No hazard identified
Consumers	Dermal	Long-term systemic effects		No hazard identified
Consumers	Dermal	Acute systemic effects		No hazard identified
Consumers	Dermal	Long-term local effects		No hazard identified
Consumers	Dermal	Acute local effects		No hazard identified
Consumers	Oral	Long-term systemic effects		No hazard identified
Consumers	Oral	Acute systemic effects		No hazard identified
Consumers	Eye contact	Local effects		No hazard identified

hexamethylene diacrylate

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	24,5 mg/m3	
Workers	Inhalation	Acute systemic effects		No hazard identified
Workers	Inhalation	Long-term local effects		Low hazard (no threshold derived)
Workers	Inhalation	Acute local effects		Low hazard (no threshold derived)
Workers	Dermal	Long-term systemic effects	2,77 mg/kg bw/day	Repeated dose toxicity dermal
Workers	Dermal	Acute systemic effects		No hazard identified (no threshold derived)
Workers	Dermal	Long-term local effects		Medium hazard (no threshold derived)
Workers	Dermal	Acute local effects		Medium hazard (no threshold derived)
Workers	Eye contact	Local effects		Low hazard (no threshold derived)
Consumers	Inhalation	Long-term systemic effects	7,2 mg/m3	Repeated dose toxicity oral
Consumers	Inhalation	Acute systemic effects		No hazard identified
Consumers	Inhalation	Long-term local effects		Medium hazard (no threshold derived)
Consumers	Inhalation	Acute local effects		Medium hazard (no threshold derived)
Consumers	Dermal	Long-term systemic effects	1,66 mg/kg bw/day	Repeated dose toxicity dermal
Consumers	Dermal	Acute systemic effects		No hazard identified
Consumers	Dermal	Long-term local effects		Medium hazard (no threshold derived)
Consumers	Dermal	Acute local effects		Medium hazard (no threshold derived)
Consumers	Oral	Long-term systemic effects	2,1 mg/kg bw/day	Repeated dose toxicity oral
Consumers	Oral	Acute systemic effects		No hazard identified
Consumers	Eye contact	Local effects		Low hazard (no threshold derived)

Hydroxycyclohexyl phenyl ketone

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	6,8 mg/m3	
Workers	Inhalation	Acute systemic effects		No hazard identified
Workers	Inhalation	Long-term local effects		No hazard identified
Workers	Inhalation	Acute local effects		No hazard identified
Workers	Dermal	Long-term systemic effects	1,94 mg/kg bw/day	

Workers	Dermal	Acute systemic effects		No hazard identified
Workers	Dermal	Long-term local effects		No hazard identified
Workers	Dermal	Acute local effects		No hazard identified
Workers	Eye contact	Local effects		No hazard identified
Consumers	Inhalation	Long-term systemic effects	1,21 mg/m3	
Consumers	Inhalation	Acute systemic effects		No hazard identified
Consumers	Inhalation	Long-term local effects		No hazard identified
Consumers	Inhalation	Acute local effects		No hazard identified
Consumers	Dermal	Long-term systemic effects	0,694 mg/kg bw/day	
Consumers	Dermal	Acute systemic effects		No hazard identified
Consumers	Dermal	Long-term local effects		No hazard identified
Consumers	Dermal	Acute local effects		No hazard identified
Consumers	Oral	Long-term systemic effects	0,694 mg/kg bw/day	
Consumers	Oral	Acute systemic effects		No hazard identified
Consumers	Eye contact	Local effects		No hazard identified

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	0,822 mg/m3	Most sensitive endpoint: Repeated dose toxicity oral
Workers	Inhalation	Acute systemic effects		No hazard identified
Workers	Inhalation	Long-term local effects		No hazard identified
Workers	Inhalation	Acute local effects		No hazard identified
Workers	Dermal	Long-term systemic effects	0,233 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity oral
Workers	Dermal	Acute systemic effects		No hazard identified
Workers	Dermal	Long-term local effects		Medium hazard (no threshold derived) Most sensitive endpoint: Sensitisation (skin)
Workers	Dermal	Acute local effects		Medium hazard (no threshold derived) Most sensitive endpoint: Sensitisation (skin)
Workers	Eye contact	Local effects		No hazard identified
Consumers	Inhalation	Long-term systemic effects	0,145 mg/m3	Most sensitive endpoint: Repeated dose toxicity oral
Consumers	Inhalation	Acute systemic effects		No hazard identified
Consumers	Inhalation	Long-term local effects		No hazard identified

Consumers	Inhalation	Acute local effects		No hazard identified
Consumers	Dermal	Long-term systemic effects	0,0833 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity oral
Consumers	Dermal	Acute systemic effects		No hazard identified
Consumers	Dermal	Long-term local effects		Medium hazard (no threshold derived) Most sensitive endpoint: Sensitisation (skin)
Consumers	Dermal	Acute local effects		Medium hazard (no threshold derived) Most sensitive endpoint: Sensitisation (skin)
Consumers	Oral	Long-term systemic effects	0,0833 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity oral
Consumers	Oral	Acute systemic effects		No hazard identified
Consumers	Eye contact	Local effects		No hazard identified

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester

Value type	Route of exposure	Health Effects	Value	Remarks
				Not required

Butylated Hydroxy Toluene (BHT)

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	4,4 mg/m3	
Workers	Dermal	Long-term systemic effects	4,7 mg/kg bw/day	
Consumers	Inhalation	Acute systemic effects	0,78 mg/m3	
Consumers	Dermal	Long-term systemic effects	1,7 mg/kg bw/day	
Consumers	Oral	Long-term systemic effects	0,25 mg/kg bw/day	

2-hydroxyethyl acrylate

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects		No hazard identified
Workers	Inhalation	Acute systemic effects		No hazard identified
Workers	Inhalation	Long-term local effects	2,4 mg/m3	Most sensitive endpoint: Irritation (respiratory tract)
Workers	Inhalation	Acute local effects		Hazard unknown (no further information necessary)
Workers	Dermal	Long-term systemic effects		No hazard identified
Workers	Dermal	Acute systemic effects		Medium hazard (no threshold derived)
Workers	Dermal	Long-term local effects		Medium hazard (no threshold derived)
Workers	Dermal	Acute local effects		Medium hazard (no threshold derived)

Workers	Eye contact	Local effects		Medium hazard (no threshold derived)
Consumers	Inhalation	Long-term systemic effects		No hazard identified
Consumers	Inhalation	Acute systemic effects		No hazard identified
Consumers	Inhalation	Long-term local effects		No hazard identified
Consumers	Inhalation	Acute local effects		No hazard identified
Consumers	Dermal	Long-term systemic effects		No hazard identified
Consumers	Dermal	Acute systemic effects		No hazard identified
Consumers	Dermal	Long-term local effects		No hazard identified
Consumers	Dermal	Acute local effects		No hazard identified
Consumers	Oral	Long-term systemic effects		No hazard identified
Consumers	Oral	Acute systemic effects		No hazard identified
Consumers	Eye contact	Local effects		Medium hazard (no threshold derived)

Predicted No Effect Concentration (PNEC)

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate

Compartment	Value	Remarks
Fresh water	0,025 mg/l	
Fresh water sediment	8,96 mg/kg dry weight	
Marine water	0,003 mg/l	
Marine sediment	0,896 mg/kg dry weight	
Sewage treatment plant	10 mg/l	
Air		No hazard identified
Soil	1,78 mg/kg dry weight	
Oral		Does not bioaccumulate.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate

Compartment	Value	Remarks
Fresh water	0,00092 mg/l	
Fresh water sediment	0,145 mg/kg dry weight	
Marine water	0,000092 mg/l	
Marine sediment	0,0145 mg/kg dry weight	
Sewage treatment plant	2 mg/l	
Soil	0,0285 mg/kg dry weight	
Intermittent use/release	0,007 mg/l	

2-phenoxyethyl acrylate

Compartment	Value	Remarks
Fresh water	0,002 mg/l	
Fresh water sediment	0,02 mg/kg dry weight	

Marine water	0,0002 mg/l	
Marine sediment	0,002 mg/kg dry weight	
Sewage treatment plant	1,77 mg/l	
Air		No hazard identified
Soil	0,006 mg/kg dry weight	
Oral		Does not bioaccumulate.
Intermittent use/release	0,012 mg/l	Fresh water

hexamethylene diacrylate

Compartment	Value	Remarks
Fresh water	0,007 mg/l	
Fresh water sediment	0,493 mg/kg dry weight	
Marine water	0,001 mg/l	
Marine sediment	0,049 mg/kg dry weight	
Sewage treatment plant	2,7 mg/l	
Air		No hazard identified
Soil	0,094 mg/kg dry weight	
Oral		Does not bioaccumulate.

Hydroxycyclohexyl phenyl ketone

Compartment	Value	Remarks
Fresh water	0,003 mg/l	
Fresh water sediment	0,0356 mg/kg dry weight	
Marine water	0,0003 mg/l	
Marine sediment	0,00356 mg/kg dry weight	
Sewage treatment plant	10 mg/l	
Air		No hazard identified
Soil	0,00537 mg/kg dry weight	
Oral		Does not bioaccumulate.
Intermittent use/release	0,144 mg/l	Fresh water
Intermittent use/release	0,0144 mg/l	Marine water

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide

Compartment	Value	Remarks
Fresh water	1,4 µg/l	
Fresh water sediment	0,115 mg/kg dry weight	
Marine water	0,14 µg/l	
Marine sediment	0,0115 mg/kg dry weight	
Sewage treatment plant		No hazard identified
Air		No hazard identified
Soil	0,0222 mg/kg dry weight	
Oral		Does not bioaccumulate.
Intermittent use/release	14 µg/l	Fresh water

Butylated Hydroxy Toluene (BHT)

Compartment	Value	Remarks
Fresh water	0,0023 mg/l	
Fresh water sediment	3,4 mg/kg dry weight	
Marine water	0,00023 mg/l	
Marine sediment	0,34 mg/kg dry weight	
Sewage treatment plant	100 mg/l	
Soil	0,24 mg/kg dry weight	
Oral	16,7 mg/kg	
Intermittent use/release	0,004 mg/l	Fresh water

2-hydroxyethyl acrylate

Compartment	Value	Remarks
Fresh water	0,017 mg/l	
Fresh water sediment	0,064 mg/kg dry weight	
Marine water	0,002 mg/l	
Marine sediment	0,006 mg/kg dry weight	
Sewage treatment plant	10 mg/l	
Air		No hazard identified
Soil	0,003 mg/kg dry weight	
Oral		Does not bioaccumulate.
Intermittent use/release	0,036 mg/l	

8.2 Exposure controls

Appropriate engineering controls
If user operations generate dust, fumes, gas, vapour or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

Respiratory protection
Respiratory protection required in insufficiently ventilated working areas and during spraying. Respirator with a gas filter

Hand protection
Protective gloves complying with EN 374.
Nitrile rubber: thickness >=0,12mm; Break through time: < 60 min
Contaminated and/or damaged gloves must be changed. Avoid natural rubber gloves. Do not wear PVC gloves, as PVC absorbs acrylates.

Eye protection
Safety glasses with side-shields Face-shield
Equipment should conform to EN 166

Skin and body protection
Use protective clothing (chemically resistant). Protective suit
Equipment should conform to EN 1149

Further protective measures
Wash face, hands and any exposed skin thoroughly after handling. Use appropriate degowning techniques to remove potentially contaminated clothing. Take off contaminated clothing and wash it before reuse. Ensure that eyewash stations and safety showers are close to the workstation location.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state: liquid at 20 °C at 1.013 hPa

Appearance:	liquid
Colour:	colourless to yellowish
Odour:	characteristic
Odour Threshold:	not established
pH:	not applicable
Melting point/freezing point:	not established
Boiling point/boiling range:	not established
Flash point:	> 100 °C, closed cup
Evaporation rate:	not established
Flammability (solid, gas):	not applicable
Burning number:	not applicable
Upper/lower flammability or explosive limits:	not established
Vapour pressure:	not established
Relative vapour density:	not established
Density:	1 g/cm³ at 20 °C
Miscibility with water:	not established
Water solubility:	not established
Surface tension:	not established
Partition coefficient (n−octanol/water):	not established
Auto-ignition temperature:	not applicable
Ignition temperature:	not established
Decomposition temperature:	not established
Heat of combustion:	not established
Viscosity, dynamic:	4.500 - 5.500 mPa.s at 20 °C
Viscosity, kinematic:	> 20,5 mm²/s at 40 °C
	> 4500 mm²/s at 20 °C

9.2 Other information

The indicated values do not necessarily correspond to the product specification. Please refer to the technical information sheet for specification data.

Explosive properties:	not established
Dust explosion class:	not applicable
Oxidising properties:	not established

SECTION 10: Stability and reactivity

10.1 Reactivity

None known.

10.2 Chemical stability

Stable under recommended storage conditions. The product is chemically stable.

10.3 Possibility of hazardous reactions

In case of heating risk of exothermic polymerisation. Strong exothermic reactions with peroxides may occur in presence of heavy metal ions.

10.4 Conditions to avoid

Keep away from heat and sources of ignition.
Exposure to sunlight.

10.5 Incompatible materials

Exothermic reaction with: Strong acids and strong bases polymerisation initiators Avoid radical-forming starting agents, peroxides and reactive metals.

10.6 Hazardous decomposition products

No hazardous decomposition products when stored and handled correctly.

SECTION 11: Toxicological information

Toxicological studies on the product are not yet available.

Please find below the toxicological data available to us for the components (hazardous components).

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

Acute toxicity, oral
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
LD50 rat, male/female: > 2.000 mg/kg
Method: OECD Test Guideline 401

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
LD50 rat, male: 4.350 mg/kg

2-phenoxyethyl acrylate
LD50 rat, male/female: > 5.000 mg/kg
Method: OECD Test Guideline 401

hexamethylene diacrylate
LD50 rat: > 5.000 mg/kg
Method: OECD Test Guideline 401

Hydroxycyclohexyl phenyl ketone
LD50 rat, male/female: > 2.500 mg/kg
Method: OECD Test Guideline 401

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
LD50 rat, male/female: > 5.000 mg/kg
Method: OECD Test Guideline 401

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
LD50 rat, female: > 2.000 mg/kg
Assessment: The substance or mixture has no acute oral toxicity
Method: OECD Test Guideline 423

Butylated Hydroxy Toluene (BHT)
LD50 rat: > 5.000 mg/kg
Method: OECD Test Guideline 401

2-hydroxyethyl acrylate
LD50 rat, male/female: 540 mg/kg

Acute toxicity, dermal
ATEmix (dermal):> 2.000 mg/kg
Method: Calculation method

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
LD50 rat, male/female: > 2.000 mg/kg
Method: OECD Test Guideline 402

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
LD50 rabbit, male: > 3.000 mg/kg

2-phenoxyethyl acrylate
LD50 rat, male/female: > 2.000 mg/kg
Method: Regulation (EC) No. 440/2008, Annex, B.3

hexamethylene diacrylate
LD50 rabbit: 3.650 mg/kg
Method: OECD Test Guideline 402

Hydroxycyclohexyl phenyl ketone
LD50 rat: > 5.000 mg/kg
Method: OECD Test Guideline 402

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
LD50 rat, male/female: > 2.000 mg/kg
Method: OECD Test Guideline 402

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
LD50 rat: > 2.000 mg/kg
Assessment: The substance or mixture has no acute dermal toxicity

Butylated Hydroxy Toluene (BHT)
LD50 rat: > 5.000 mg/kg
Method: OECD Test Guideline 402

2-hydroxyethyl acrylate
LD50 rat, male/female: > 1.000 mg/kg
Method: OECD Test Guideline 402

Assessment: Toxic in contact with skin.
Classification (1272/2008/CE)

Acute toxicity, inhalation
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
No data available.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
No data available, supplier information

2-phenoxyethyl acrylate
Assessment: Study scientifically not justified.

hexamethylene diacrylate
LC0 rat, male/female: > 0,41 mg/l, 7 h
Test atmosphere: vapour
Assessment: The substance or mixture has no acute inhalation toxicity

Hydroxycyclohexyl phenyl ketone
LC50 rat, male/female: > 1 mg/l
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Method: OECD Test Guideline 403

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No data available.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Assessment: no data available

Butylated Hydroxy Toluene (BHT)
RD50 > 0,546 mg/l, 30 min
Test atmosphere: dust/mist
Assessment: The substance or mixture has no acute inhalation toxicity
Under the conditions of the test no mortality caused.

2-hydroxyethyl acrylate
LC50 rat, female: > 1,45 mg/l, 7 h
Test atmosphere: vapour
Assessment: The substance or mixture has no acute inhalation toxicity

Primary skin irritation
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Species: rabbit
Result: non-irritant
Classification: No skin irritation
Method: OECD Test Guideline 404

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Species: rabbit
Result: non-irritant
Classification: No skin irritation

2-phenoxyethyl acrylate
Species: rabbit
Result: slight irritant
Classification: No skin irritation

hexamethylene diacrylate
Species: rabbit
Result: irritating
Classification: Causes skin irritation.

Hydroxycyclohexyl phenyl ketone
Species: rabbit
Result: slight irritant
Classification: No skin irritation
Method: OECD Test Guideline 404

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Species: rabbit
Result: slight irritant
Classification: No skin irritation

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Classification: Causes skin irritation.

Species: In vitro test system
Result: positive
Method: OECD Test Guideline 439

Butylated Hydroxy Toluene (BHT)
Species: rabbit
Result: slight irritant
Classification: No skin irritation

2-hydroxyethyl acrylate
Species: rabbit
Result: Corrosive
Classification: Causes severe skin burns and eye damage (Skin Corr. 1B).

Primary mucosae irritation
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Species: rabbit
Result: slight irritant
Classification: No eye irritation
Method: OECD Test Guideline 405

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Species: rabbit
Result: slight irritant
Classification: No eye irritation

2-phenoxyethyl acrylate
Species: rabbit
Result: slight irritant
Classification: No eye irritation

hexamethylene diacrylate
Species: rabbit
Result: irritating
Classification: Causes serious eye irritation.

Hydroxycyclohexyl phenyl ketone
Species: rabbit
Result: slight irritant
Classification: No eye irritation
Method: OECD Test Guideline 405

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Species: rabbit
Result: slight irritant
Classification: No eye irritation

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Species: rabbit
Result: slight irritant
Classification: No eye irritation
Method: OECD Test Guideline 405

Butylated Hydroxy Toluene (BHT)
Species: rabbit
Result: slight irritant
Classification: No eye irritation

2-hydroxyethyl acrylate
Species: rabbit
Result: Corrosive
Classification: Causes serious eye damage.

Sensitisation
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact.
Method: OECD Test Guideline 429

Respiratory sensitization
No data available.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact (Sub cat. 1A)
Method: OECD Test Guideline 429

Respiratory sensitization
No data available.

2-phenoxyethyl acrylate
Skin sensitisation according to Magnusson/Kligmann (maximizing test):
Species: Guinea pig
Result: positive
Classification: May cause sensitization by skin contact (Sub cat. 1A)
Method: OECD Test Guideline 406

Respiratory sensitization
No data available.

hexamethylene diacrylate
Skin sensitisation:
Result: positive
Classification: May cause sensitization by skin contact.

Respiratory sensitization
No data available.

Hydroxycyclohexyl phenyl ketone
Skin sensitisation according to Magnusson/Kligmann (maximizing test):
Species: Guinea pig
Result: negative
Classification: Does not cause skin sensitization.
Method: OECD Test Guideline 406

Respiratory sensitization
No data available.

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact (Sub cat. 1B)
Method: OECD Test Guideline 429

Respiratory sensitization
No data available.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact.
Method: OECD Test Guideline 429

Butylated Hydroxy Toluene (BHT)
Skin sensitisation:
Species: Human experience
Result: negative
Classification: Does not cause skin sensitization.

Respiratory sensitization
No data available.

2-hydroxyethyl acrylate
Skin sensitization (local lymph node assay (LLNA)):
Species: Mouse
Result: positive
Classification: May cause sensitization by skin contact.

Respiratory sensitization
No data available.

Subacute, subchronic and prolonged toxicity
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
LOAEL (Lowest observable adverse effect level): 100 mg/kg
Application Route: Oral
Species: rat, male/female
Dose Levels: 100 - 300 - 1000 mg/kg bw/day
Exposure duration: 92 - 93 d
Frequency of treatment: daily
Method: OECD Test Guideline 408

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
NOAEL: 100 mg/kg
Application Route: Oral
Species: rat, male/female
Method: OECD Test Guideline 422

2-phenoxyethyl acrylate
NOAEL: 300 mg/kg
Application Route: Oral
Species: rat, male/female
Dose Levels: 0 - 100 - 300 - 800
Method: OECD Test Guideline 422

NOAEL: 350 mg/kg
Application Route: Oral
Species: rat, male/female
Method: OECD Test Guideline 408

hexamethylene diacrylate
NOAEL: 250 mg/kg
Application Route: Oral
Species: rat, male/female
Dose Levels: 75 - 250 - 750 mg/kg/day
Method: OECD Test Guideline 422

Hydroxycyclohexyl phenyl ketone
NOAEL: 300 mg/kg
Application Route: Oral
Species: rat, male/female
Dose Levels: 0 - 5 - 50 - 300 mg/kg bw/day
Exposure duration: 28 d
Frequency of treatment: daily
Method: OECD Test Guideline 407

NOAEL: 300 mg/kg
Application Route: Oral
Species: rat, male/female
Dose Levels: 0 - 100 - 300 - 1000 mg/kg bw/day
Exposure duration: 90 d
Frequency of treatment: daily
Method: OECD Test Guideline 408

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
NOAEL: 100 mg/kg bw/day
LOAEL (Lowest observable adverse effect level): 300 mg/kg bw/day
Application Route: Oral
Species: rat, male/female
Dose Levels: 0 - 100 - 300 - 1000 mg/kg bw/day
Method: OECD Test Guideline 408

NOAEL: 50 mg/kg bw/day
LOAEL (Lowest observable adverse effect level): 250 mg/kg bw/day
Application Route: Oral
Species: rat, male/female
Dose Levels: 0 - 50 - 250 - 750 mg/kg bw/day

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
NOAEL: 1.000 mg/kg
Application Route: Oral
Species: rat, male/female
Dose Levels: 0 - 100 - 300 - 1000 mg/kg bw/day
Frequency of treatment: daily
Method: OECD Test Guideline 407

Butylated Hydroxy Toluene (BHT)
NOAEL: 25 mg/kg
Application Route: Oral
Species: rat
Exposure duration: 28 d

2-hydroxyethyl acrylate
NOAEL: 0,0024 mg/l
Application Route: Inhalative

Species: rat, male/female
Exposure duration: 1,5 a
Test substance: vapour

Carcinogenicity
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
No data available.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
No data available.

2-phenoxyethyl acrylate
No data available.

hexamethylene diacrylate
No data available.

Hydroxycyclohexyl phenyl ketone
No data available.

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
no data available

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
No data available.

Butylated Hydroxy Toluene (BHT)
Species: rat, male/female
Application Route: Oral
Exposure duration: 22 month(s)
Frequency of treatment: daily
No increase in the incidence of tumors.

2-hydroxyethyl acrylate
Species: rat, male/female
Application Route: Inhalative
Test substance: vapour
Exposure duration: 1,5 a
Result: Animal testing did not show any carcinogenic effects.

Reproductive toxicity/Fertility
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
NOAEL (parents, generelly toxicity): >= 200 mg/kg bw/day
NOAEL (parents, fertility): >= 200 mg/kg bw/day
NOAEL (offspring): >= 200 mg/kg bw/day
Species: rat, male/female
Application Route: Oral
Dose Levels: 0 - 40 - 100 - 200 mg/kg bw/day
Method: OECD Test Guideline 443

NOAEL (parents, generelly toxicity): > 900 mg/kg
NOAEL (parents, fertility): > 900 mg/kg
Test type: Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test
Species: rat, male/female
Application Route: Oral
Method: OECD Test Guideline 422

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
NOAEL - Parents: 100 mg/kg
NOAEL – F1: 100 mg/kg
Test type: Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test
Species: rat, male/female
Application Route: Oral
Dose Levels: 0 - 25 - 100 - 500 mg/kg body weight/day
Frequency of treatment: daily

2-phenoxyethyl acrylate
NOAEL (parents, generelly toxicity): 100 mg/kg bw/day
NOAEL (parents, fertility): 300 mg/kg bw/day
Test type: Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test
Species: rat, male/female
Application Route: Oral
Dose Levels: 0 - 100 - 300 - 800 mg/kg bw/day
Method: OECD Test Guideline 422

hexamethylene diacrylate
NOAEL (parents, generelly toxicity): 250 mg/kg
NOAEL (parents, fertility): 750 mg/kg
Test type: Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test
Species: rat, male/female
Application Route: Oral
Method: OECD Test Guideline 422

Hydroxycyclohexyl phenyl ketone
NOAEL (parents, generelly toxicity): 900 mg/kg bw/day
NOAEL (parents, fertility): 900 mg/kg bw/day
NOAEL (offspring): 900 mg/kg bw/day
Species: rat, male/female
Application Route: Oral
Dose Levels: 0 - 100 - 300 - 900 mg/kg bw/day
Method: OECD Test Guideline 443

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
NOAEL (parents, generelly toxicity): 200 mg/kg bw/day
NOAEL (parents, fertility): 60 mg/kg bw/day
NOAEL (offspring): 200 mg/kg bw/day
Test type: One-generation study
Species: rat, male/female
Application Route: Oral
Dose Levels: 0 - 60 - 200 - 600 mg/kg bw/day
Frequency of treatment: daily
Method: OECD Test Guideline 421

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
No data available.

Butylated Hydroxy Toluene (BHT)
NOAEL - Parents: 500 mg/kg
NOAEL – F1: 500 mg/kg
NOAEL (parents, generelly toxicity): 100 mg/kg
Test type: Two-generation study
Species: rat, male/female
Application Route: Oral

2-hydroxyethyl acrylate
NOAEL (parents, generelly toxicity): 0,019 mg/l
NOAEL (parents, fertility): 0,269 mg/l
NOAEL (offspring): 0,092 mg/l
Test type: Two-generation study
Species: rat, male/female
Dose Levels: 0- 0,019 - 0,092 - 0,269 mg/l
Test substance: vapour
Method: OECD Test Guideline 416
Toxicological studies of a comparable product.

Reproductive toxicity/Developmental Toxicity/Teratogenicity
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
NOAEL (teratogenicity): 1000 mg/kg bw/day
NOAEL (maternal): > 1000 mg/kg bw/day
Species: rat, female
Application Route: Oral
Method: OECD Test Guideline 414

NOAEL (teratogenicity): 1000 mg/kg bw/day
NOAEL (maternal): 1000 mg/kg bw/day
Species: rabbit, female
Application Route: Oral
Method: OECD Test Guideline 414

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
NOAEL (teratogenicity): 500 mg/kg
NOAEL (maternal): 100 mg/kg
Test type: Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test
Species: rat, male/female
Application Route: Oral
Dose Levels: 0 - 25 - 100 - 500 mg/kg body weight/day
Method: OECD Test Guideline 422

2-phenoxyethyl acrylate
NOAEL (teratogenicity): 600 mg/kg bw/day
NOAEL (maternal): 600 mg/kg bw/day
NOAEL (developmental toxicity): 600 mg/kg bw/day
Test type: Pre-/postnatal development
Species: rat
Application Route: Oral
Dose Levels: 0 - 65- 200 - 600 mg/kg bw/day
Method: OECD Test Guideline 414

hexamethylene diacrylate
NOAEL (teratogenicity): 750 mg/kg
NOAEL (maternal): 250 mg/kg
Species: rat, male and female
Application Route: Oral
Dose Levels: 75 - 250 - 750 mg/kg/day
Method: OECD Test Guideline 422
Did not show teratogenic effects in animal experiments.

Hydroxycyclohexyl phenyl ketone
NOAEL (maternal): 300 mg/kg
NOAEL (developmental toxicity): 900 mg/kg bw/day
Test type: Pre-/postnatal development
Species: rat, female
Application Route: Oral
Dose Levels: 0 - 100 - 300 - 900 mg/kg bw/day
Frequency of treatment: daily
Method: OECD Test Guideline 414

NOAEL (maternal): 500 mg/kg
NOAEL (developmental toxicity): 250 mg/kg bw/day
Test type: Pre-/postnatal development
Species: rabbit, female
Application Route: Oral
Dose Levels: 0 - 250 - 500 - 750 mg/kg bw/day
Frequency of treatment: daily
Method: OECD Test Guideline 414

NOAEL (maternal): 900 mg/kg
NOAEL (developmental toxicity): 900 mg/kg bw/day
Test type: extended one-generation study
Species: rat, male/female
Application Route: Oral
Dose Levels: 0 - 100 - 300 - 900 mg/kg bw/day
Frequency of treatment: daily
Method: OECD Test Guideline 443

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
NOAEL (teratogenicity): 150 mg/kg bw/day
NOAEL (maternal): 150 mg/kg bw/day
LOAEL (teratogenicity): 500 mg/kg bw/day

LOAEL (maternal): 500 mg/kg bw/day
Test type: Pre-/postnatal development
Species: rat, female
Application Route: Oral
Dose Levels: 0 - 50 - 150 - 500 mg/kg bw/day
Method: OECD Test Guideline 414

NOAEL (teratogenicity): >100 mg/kg bw/day
NOAEL (maternal): >100 mg/kg bw/day
LOAEL (developmental toxicity): 100 mg/kg bw/day
Test type: Pre-/postnatal development
Species: rabbit, female
Application Route: Oral
Dose Levels: 0 - 10 - 30 - 100 mg/kg bw/day
Method: OECD Test Guideline 414

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
No data available.

Butylated Hydroxy Toluene (BHT)
NOAEL (maternal): 100 mg/kg
NOAEL (developmental toxicity): 100 mg/kg body weight/day
Species: rat
Application Route: Oral
Frequency of treatment: daily
Did not show teratogenic effects in animal experiments.

2-hydroxyethyl acrylate
NOAEL (maternal): 0,0241 mg/l
NOAEL (developmental toxicity): 0,0482 mg/l
Species: rat
Test substance: vapour

Genotoxicity in vitro
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Test type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: Ames test
Test system: Escherichia coli
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Test type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: Ames test
Test system: Escherichia coli
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster V79 cell line
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476

Test type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 487

2-phenoxyethyl acrylate
Test type: Ames test
Test system: Escherichia coli
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476

Test type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 473

hexamethylene diacrylate
Test type: Ames test
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: In vitro mammalian cell gene mutation test
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476

Hydroxycyclohexyl phenyl ketone
Test type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: Ames test
Test system: Escherichia coli
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary (CHO) cells
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Test type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: Ames test
Test system: Escherichia coli
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: Chromosome aberration test in vitro
Test system: Chinese hamster lung cells
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 473

Test type: Chromosome aberration test in vitro
Test system: Chinese hamster V79 cell line
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Test type: Ames test
Test system: Escherichia coli
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: Ames test
Test system: Escherichia coli
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471

Test type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 473

Butylated Hydroxy Toluene (BHT)
Test type: Ames test
Metabolic activation: with/without
Result: negative

Test type: In vitro mammalian cell gene mutation test
Metabolic activation: with/without
Result: negative

Test type: Chromosome aberration test in vitro
Metabolic activation: with/without
Result: negative

2-hydroxyethyl acrylate
Test type: Salmonella/microsome test (Ames test)
Test system: Salmonella typhimurium
Metabolic activation: with/without
Result: negative

Test type: Micronucleus test
Test system: mouse lymphoma cells
Metabolic activation: without
Result: positive

Genotoxicity in vivo
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Test type: In vivo micronucleus test
Species: Mouse, male
Application Route: Oral
Result: negative
Method: OECD Test Guideline 474

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
No data available, supplier information

2-phenoxyethyl acrylate
no data available

hexamethylene diacrylate
Test type: In vivo micronucleus test
Species: Mouse, male
Result: negative
Method: OECD Test Guideline 474
Studies of a comparable product.

Hydroxycyclohexyl phenyl ketone
Test type: In vivo micronucleus test
Species: Chinese hamster, male/female
Application Route: Oral
Result: negative
Method: OECD Test Guideline 474

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No data available.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
No data available.

Butylated Hydroxy Toluene (BHT)
Test type: Cytogenetic assay
Species: rat, male
Application Route: Oral
Result: negative

2-hydroxyethyl acrylate
Test type: Micronucleus test
Species: Mouse
Result: negative
Method: OECD Test Guideline 474
Toxicological studies of a comparable product.

STOT evaluation – one-time exposure
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Based on available data, the classification criteria are not met.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Based on available data, the classification criteria are not met.

2-phenoxyethyl acrylate
Based on available data, the classification criteria are not met.

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

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

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No data available.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Based on available data, the classification criteria are not met.

Butylated Hydroxy Toluene (BHT)
Based on available data, the classification criteria are not met.

2-hydroxyethyl acrylate
Based on available data, the classification criteria are not met.

STOT evaluation – repeated exposure
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Based on available data, the classification criteria are not met.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Based on available data, the classification criteria are not met.

2-phenoxyethyl acrylate
Based on available data, the classification criteria are not met.

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

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

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No data available.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Based on available data, the classification criteria are not met.

Butylated Hydroxy Toluene (BHT)
Based on available data, the classification criteria are not met.

2-hydroxyethyl acrylate
Based on available data, the classification criteria are not met.

Aspiration toxicity

Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Based on available data, the classification criteria are not met.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Based on available data, the classification criteria are not met.

2-phenoxyethyl acrylate
No data available.

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

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

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No data available.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
No data available.

Butylated Hydroxy Toluene (BHT)
Based on available data, the classification criteria are not met.

2-hydroxyethyl acrylate
Based on available data, the classification criteria are not met.

CMR Assessment
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Carcinogenicity: No data available.
Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Carcinogenicity: Based on available data, the classification criteria are not met.
Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

2-phenoxyethyl acrylate
Carcinogenicity: Based on available data, the classification criteria are not met.
Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: Suspected of damaging the unborn child (Repr. 2).
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

hexamethylene diacrylate
Carcinogenicity: No data available.
Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

Hydroxycyclohexyl phenyl ketone
Carcinogenicity: No data available.
Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Carcinogenicity: No data available.
Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: Suspected of damaging the unborn child (Repr. 2).
Reproductive toxicity/Fertility: May damage fertility (Repr. 1B).

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Carcinogenicity: No data available.
Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: No data available.
Reproductive toxicity/Fertility: No data available.

Butylated Hydroxy Toluene (BHT)
Carcinogenicity: Based on available data, the classification criteria are not met.
Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

2-hydroxyethyl acrylate
Carcinogenicity: Based on available data, the classification criteria are not met.
Mutagenicity: Based on available data, the classification criteria are not met.
Teratogenicity: Based on available data, the classification criteria are not met.
Reproductive toxicity/Fertility: Based on available data, the classification criteria are not met.

Toxicology Assessment
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Acute effects: Based on available data, the classification criteria are not met.
Sensitization: May cause an allergic skin reaction.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Acute effects: Based on available data, the classification criteria are not met.
Sensitization: May cause an allergic skin reaction.

2-phenoxyethyl acrylate
Acute effects: Based on available data, the classification criteria are not met.
Sensitization: May cause an allergic skin reaction.

hexamethylene diacrylate
Acute effects: Causes skin irritation. Causes serious eye irritation.
Sensitization: May cause an allergic skin reaction.

Hydroxycyclohexyl phenyl ketone
Acute effects: Based on available data, the classification criteria are not met.
Sensitization: Based on available data, the classification criteria are not met.

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Acute effects: Based on available data, the classification criteria are not met.
Sensitization: May cause an allergic skin reaction.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Acute effects: Causes skin irritation.
Sensitization: May cause an allergic skin reaction.

Butylated Hydroxy Toluene (BHT)
Acute effects: Based on available data, the classification criteria are not met.
Sensitization: Based on available data, the classification criteria are not met.

2-hydroxyethyl acrylate
Acute effects: Harmful if swallowed. Toxic in contact with skin. Causes severe skin burns and eye damage.
Sensitization: May cause an allergic skin reaction.

11.2 Information on other hazards

Endocrine disrupting properties
The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 12: Ecological information

Ecotoxicological studies of the product are not available.

Do not allow to escape into waterways, wastewater or soil.

Please find below the ecotoxicological data available to us for the components.

12.1 Toxicity

Acute Fish toxicity
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
LC50 > 0,082 mg/l
Species: Cyprinus carpio (Carp)
Exposure duration: 96 h
Method: ISO 7346/1
No toxic effects in the water-soluble range.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
LC50 0,704 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 203

2-phenoxyethyl acrylate
LC50 10 mg/l
Species: Leuciscus idus (Golden orfe)
Exposure duration: 96 h
Method: OECD Test Guideline 203

hexamethylene diacrylate
LC50 0,38 mg/l
Species: Oryzias latipes (Japanese medaka)
Exposure duration: 96 h
Method: OECD Test Guideline 203

Hydroxycyclohexyl phenyl ketone
LC50 24 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: Regulation (EC) No. 440/2008, Annex, C.1

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
LC50 1,4 mg/l
Species: Cyprinus carpio (Carp)
Exposure duration: 96 h
Method: OECD Test Guideline 203

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
LC50 20 mg/l
Species: Fish
Exposure duration: 96 h
Method: OECD Test Guideline 203

Butylated Hydroxy Toluene (BHT)
LC0 > 0,57 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: Directive 67/548/EEC, Annex V, C.1.

2-hydroxyethyl acrylate
LC50 4,8 mg/l
Test type: Fresh water study
Species: Pimephales promelas (fathead minnow)
Exposure duration: 96 h

Chronic Fish toxicity
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
EC10 0,43 mg/l
Species: Pimephales promelas (fathead minnow)
Exposure duration: 33 d
Method: OECD Test Guideline 210

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Study scientifically not justified.

2-phenoxyethyl acrylate
No data available.

hexamethylene diacrylate
NOEC 0,072 mg/l
Species: Oryzias latipes (Orange-red killifish)
Exposure duration: 39 d
Method: OECD Test Guideline 210

Hydroxycyclohexyl phenyl ketone
EC10 > 10 mg/l
Species: Pimephales promelas (fathead minnow)
Exposure duration: 32 d
Method: OECD Test Guideline 210

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No data available.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
No data available.

Butylated Hydroxy Toluene (BHT)
No data available.

2-hydroxyethyl acrylate
No data available.

Acute toxicity for daphnia
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
EL50 > 100 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Study scientifically not justified.

2-phenoxyethyl acrylate
EC50 1,21 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

hexamethylene diacrylate
EC50 2,7 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

Hydroxycyclohexyl phenyl ketone
EC50 53,9 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
EC50 3,53 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
EC50 44 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

Butylated Hydroxy Toluene (BHT)
EC50 0,61 mg/l
Test type: Immobilization
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

2-hydroxyethyl acrylate
EC50 9,3 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

Chronic toxicity to daphnia
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
EC10 > 0,51 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 211

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
NOEC 0,092 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 211

2-phenoxyethyl acrylate
EC10 0,1 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 211
Studies of a comparable product.

hexamethylene diacrylate
NOEC 0,14 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 211

Hydroxycyclohexyl phenyl ketone
EC10 (mortality) 0,04 - 0,5 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 211

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No data available.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
No data available.

Butylated Hydroxy Toluene (BHT)
NOEC 0,316 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 202

2-hydroxyethyl acrylate
NOEC (Reproduction) 0,48 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 211

Acute toxicity for algae
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
EL50 105 mg/l
endpoint: Growth inhibition
Species: Pseudokirchneriella subcapitata (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

EL10 29 mg/l
endpoint: Growth inhibition
Species: Pseudokirchneriella subcapitata (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
EC50 1,98 mg/l
Species: Pseudokirchneriella subcapitata (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

NOEC 0,405 mg/l
Species: Pseudokirchneriella subcapitata (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

2-phenoxyethyl acrylate
EC50 4,4 mg/l
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: ISO 8692

EC10 0,71 mg/l
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: ISO 8692

hexamethylene diacrylate
EC50 2,33 mg/l
Species: Selenastrum capricornutum (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

NOEC 0,9 mg/l
Species: Selenastrum capricornutum (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

Hydroxycyclohexyl phenyl ketone
EC50 14,4 mg/l
endpoint: Growth inhibition
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

EC10 2,51 mg/l
endpoint: Growth inhibition
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
EC50 > 2,01 mg/l
Species: Pseudokirchneriella subcapitata (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

EC10 1,56 mg/l
Species: Pseudokirchneriella subcapitata (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
NOEC 2 mg/l
Species: Pseudokirchneriella subcapitata (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

EC50 37 mg/l
Species: Pseudokirchneriella subcapitata (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

Butylated Hydroxy Toluene (BHT)
ErC50 > 0,42 mg/l
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: Directive 67/548/EEC, Annex V, C.3.
Ultra turrax: 60 sec. 8000 rpm; 24h magnetic stirrer; Filtration.

2-hydroxyethyl acrylate
EC50 6 mg/l
Test type: Fresh water study
Species: Pseudokirchneriella subcapitata (green algae)
Exposure duration: 72 h
Method: OECD Test Guideline 201

NOEC 1 mg/l
Test type: Fresh water study
Species: Pseudokirchneriella subcapitata (green algae)

Exposure duration: 72 h
Method: OECD Test Guideline 201

Acute bacterial toxicity
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
EC50 > 1.000 mg/l
Species: activated sludge
Exposure duration: 3 h
Method: OECD Test Guideline 209

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Study scientifically not justified.

2-phenoxyethyl acrylate
EC50 177 mg/l
Species: activated sludge
Method: OECD Test Guideline 209

hexamethylene diacrylate
EC50 270 mg/l
Species: activated sludge
Exposure duration: 30 min
Method: OECD Test Guideline 209

Hydroxycyclohexyl phenyl ketone
EC50 > 100 mg/l
Species: activated sludge
Exposure duration: 3 h

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
EC50 > 1.000 mg/l
Species: activated sludge
Method: OECD Test Guideline 209

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
No data available.

Butylated Hydroxy Toluene (BHT)
EC50 > 10.000 mg/l
Species: activated sludge
Exposure duration: 3 h

2-hydroxyethyl acrylate
EC10 > 100 mg/l
Species: Sewage sludge
Exposure duration: 72 h

Ecotoxicology Assessment
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: Toxic to aquatic life with long lasting effects.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Acute aquatic toxicity: Very toxic to aquatic life.
Chronic aquatic toxicity: Very toxic to aquatic life with long lasting effects.

2-phenoxyethyl acrylate
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: Toxic to aquatic life with long lasting effects.

hexamethylene diacrylate
Acute aquatic toxicity: Very toxic to aquatic life.
Chronic aquatic toxicity: Toxic to aquatic life with long lasting effects.

Hydroxycyclohexyl phenyl ketone
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: Harmful to aquatic life with long lasting effects.

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: Toxic to aquatic life with long lasting effects.

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: Harmful to aquatic life with long lasting effects.

Butylated Hydroxy Toluene (BHT)
Acute aquatic toxicity: Very toxic to aquatic life.
Chronic aquatic toxicity: Very toxic to aquatic life with long lasting effects.

2-hydroxyethyl acrylate
Acute aquatic toxicity: Very toxic to aquatic life.
Chronic aquatic toxicity: Harmful to aquatic life with long lasting effects.
Impact on Sewage Treatment: Because of the low bacterial toxicity, there is no risk of an adverse effect on the performance of biological waste water treatment plants.

M-Factor
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
M-factor (acute aquat. tox.): 1
M-factor (chron. aquat. tox.): 1

hexamethylene diacrylate
M-factor (acute aquat. tox.): 1

Butylated Hydroxy Toluene (BHT)
M-factor (acute aquat. tox.): 1
M-factor (chron. aquat. tox.): 1

2-hydroxyethyl acrylate
M-factor (acute aquat. tox.): 1

12.2 Persistence and degradability

Biodegradability
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Biodegradation: 42 %, 28 d, i.e. not readily biodegradable (10 day time window criterion is not met)
Method: OECD Test Guideline 301 F

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Test type: aerobic
Inoculum: activated sludge, non-adapted
Biodegradation: 51 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 301 F

Test type: aerobic
Inoculum: activated sludge, non-adapted
Biodegradation: 73,9 %, 60 d, i.e. not readily biodegradable (10 day time window criterion is not met)
Method: OECD Test Guideline 301 F

Test type: aerobic
Inoculum: activated sludge, non-adapted
Biodegradation: 57 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 310

2-phenoxyethyl acrylate
Test type: aerobic
Inoculum: Sewage sludge
Biodegradation: 22 %, 28 d, i.e. readily biodegradable
Method: OECD Test Guideline 301 D

hexamethylene diacrylate
Biodegradation: 60 - 70 %, 28 d, i.e. readily biodegradable
Method: OECD Test Guideline 310

Biodegradation: 60 - 70 %, 28 d, i.e. inherently degradable
Method: OECD Test Guideline 302 B

Hydroxycyclohexyl phenyl ketone
Test type: aerobic
Inoculum: activated sludge, non-adapted
Biodegradation: 73 %, 28 d, i.e. readily biodegradable
Method: Regulation (EC) No. 440/2008, Annex, C.4-C

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Test type: aerobic
Inoculum: activated sludge, non-adapted
Biodegradation: 0 - 10 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 301 F

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
Test type: aerobic
Inoculum: activated sludge
Biodegradation: 0 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 301 B

Butylated Hydroxy Toluene (BHT)
Biodegradation: 4,5 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 301 C

2-hydroxyethyl acrylate
Biodegradation: 79 %, 28 d, i.e. readily biodegradable
Method: OECD Test Guideline 301 B

Stability in water
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Test type: Hydrolysis
Half life: 110 h at 25 °C (pH: 7)
Method: OECD Test Guideline 111

Test type: Hydrolysis
Half life: 38 h at 25 °C (pH: 9)
Method: OECD Test Guideline 111

12.3 Bioaccumulative potential

Bioaccumulation
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Species: Lepomis macrochirus (Bluegill sunfish)
Exposure duration: 14 d
Method: OECD Test Guideline 305
An accumulation in aquatic organisms is not to be expected.

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Bioconcentration factor (BCF): 37
Species: Danio rerio (zebra fish)
Exposure duration: 56 h
Method: OECD Test Guideline 305
Studies of a comparable product.

2-phenoxyethyl acrylate
Due to the distribution coefficient n-octanol/water, accumulation in organisms is not expected.

hexamethylene diacrylate
no data available

Hydroxycyclohexyl phenyl ketone
Bioconcentration factor (BCF): 4 - 12
Species: Cyprinus carpio (Carp)
Method: OECD Test Guideline 305 C

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
Bioconcentration factor (BCF): 18 - 22
Species: Cyprinus carpio (Carp)
Exposure duration: 8 Weeks

2-Propenoic acid, 1,1'-[(4-methyl-1,3-phenylene)bis(iminocarbonyloxy-2,1-ethanediyl)] ester
no data available

Butylated Hydroxy Toluene (BHT)
Bioconcentration factor (BCF): 1.277
Species: Cyprinus carpio (Carp)
Exposure duration: 56 Days
Method: OECD Test Guideline 305 C

2-hydroxyethyl acrylate
no data available

Partition coefficient (n−octanol/water)
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate

log Pow: 4,09(value log Pow: calculated)

2-phenoxyethyl acrylate

log Pow: 2,58
Butylated Hydroxy Toluene (BHT)

log Pow: 5,1
2-hydroxyethyl acrylate

log Pow: 0,21

12.4 Mobility in soil

Distribution among environmental compartments
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate
Adsorption/Soil
log Koc value: 3,55
Method: OECD Test Guideline 121

12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Endocrine disrupting properties

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
The product contains none organically bound halogens.

SECTION 13: Disposal considerations

The information in this section contains generic advice and guidance. Reference number 2008/98/EC

Dispose in accordance with applicable international, national and local laws, ordinances and statutes. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used. The classification of the product may meet the criteria for a hazardous waste. Offer surplus and non-recyclable solutions to a licensed disposal company. Do not dispose of waste into sewer.

13.1 Waste treatment methods

After containers have been emptied as thoroughly as possible (e.g. by pouring, scraping or draining until "drip-dry"), they can be sent to an appropriate collection point set up within the framework of the existing take-back scheme of the chemical industry. Empty containers retain residue and can be dangerous. Containers must be recycled in compliance with national legislation and environmental regulations. Dispose of empty containers and wastes safely. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Where possible recycling is preferred to disposal or incineration.

No disposal into waste water.

SECTION 14: Transport information

ADR/RID

14.1 UN number or ID number	:	UN 3082
14.2 UN proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bisphenol A diglycidyl diacrylate, 2-Phenoxyethyl acrylate)
14.3 Transport hazard class(es)	:	9
Hazard Identification Number	:	90
14.4 Packing group	:	III
14.5 Environmental hazards	:	yes

Limited quantity regulations applicable in accordance with chapter 3.4 ADR/RID in compliance with threshold value

ADN

14.1 UN number or ID number	:	UN 3082
14.2 UN proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bisphenol A diglycidyl diacrylate, 2-Phenoxyethyl acrylate)
14.3 Transport hazard class(es)	:	9
Hazard Identification Number	:	90
14.4 Packing group	:	III
14.5 Environmental hazards	:	yes

This classification data does not apply to transportation by tanker. If required, additional information can be requested from the manufacturer.

IATA

14.1 UN number or ID number	:	UN 3082
14.2 UN proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bisphenol A diglycidyl diacrylate, 2-Phenoxyethyl acrylate)
14.3 Transport hazard class(es)	:	9

14.4 Packing group	:	III
14.5 Environmental hazards	:	yes

IMDG

14.1 UN number or ID number	:	UN 3082
14.2 UN proper shipping name	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Bisphenol A diglycidyl diacrylate, 2-Phenoxyethyl acrylate)
14.3 Transport hazard class(es)	:	9
14.4 Packing group	:	III
14.5 Environmental hazards	:	Marine pollutant
EmS Code	:	F-A - S-F
Segregation Group IMDG	:	not applicable

14.6 Special precautions for user

See section 6 - 8.

Additional information	:	Environmentally hazardous substance. Keep separated from foodstuffs.

14.7 Maritime transport in bulk according to IMO instruments

Product is not transported by us in bulk.

SECTION 15: Regulatory information

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

Candidate List of Substances of Very High Concern for Authorisation
This product contains substances identified as SVHC according to REACH Regulation (EC) no. 1907/2006, Article 59. Please refer to section 3.

Directive 2012/18/EU on the control of major-accident hazards involving dangerous substances.
E2 Environmental hazards

Quantity1:	200 t	Quantity2:	500 t

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII)
Conditions of restriction for the following entries should be considered: 3

TA Luft List (Germany)
Type: 5.2.1 Total dust
Fraction of other substances: 2,33 %

Type: 5.2.7.1.3 Substances toxic to reproduction
Fraction of other substances: 0,02 %

Type: 5.2.5 Organic Substances
portion Class 1: 10,73 %

Fraction of other substances: 47,91 %

Water contaminating class (Germany)
2 obviously hazardous to water
Classification according to AwSV, Annex 1 (5.2)

Other regulations
Take note of Law on the protection of mothers at work, in education and in studies (Maternity Protection Act - MuSchG).
Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.
The product is subject to the supply restrictions of the German Ordinance on the Prohibition of Chemicals

15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for:
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
Butylated Hydroxy Toluene (BHT)

SECTION 16: Other information

Full text of the hazard statements of the CLP classification (1272/2008/CE) referred to under sections 2, 3 and 10.

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.
H335	May cause respiratory irritation.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H361d	Suspected of damaging the unborn child.
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.

Abbreviations and acronyms

ADN	Accord européen relatif au transport international des marchandises Dangereuses par voie de Navigation intérieure
ADR	Accord européen relatif au transport international des marchandises Dangereuses par Route
ANSI	American National Standards Institute
ASTM	American Society of Testing and Materials (US)
ATE	Acute Toxic Estimate
AwSv	Verordnung über Anlagen zum Umgang mit wassergefährdenden Stoffen
BCF	Bioconcentration Factor
CAS	Chemical Abstract Service
CLP	Regulation on Classification, Labelling and Packaging of Substances and Mixtures
CMR	Cancerogenic Mutagenic Reprotoxic
DIN	Deutsches Institut für Normung
DNEL	Derived No-Effect Level
EC…	Effect Concentration ... %
EWC	European Waste Catalogue
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
ICAO	International Civil Aviation Organization
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
ISO	International Organization for Standardization
IUPAC	International Union of Pure and Applied Chemistry
LOAEL	Lowest Observable Adverse Effect Level
LC…	Lethal Concentration, ...%
LD…	Lethal Dose, ...%
MARPOL	International Convention for the Prevention of Pollution From Ships
NOAEL	No Observed Adverse Effect Level
NOEL/NOEC	No Observed Effect Level/Concentration
OECD	Organisation for Economic Co-operation and Development
PBT	persistent, bioaccumulative, toxic
PNEC	Predicted No-Effect Concentration
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
RID	Règlement concernant le transport International ferroviaire de marchandises Dangereuses
STOT	Specific Target Organ Toxicity
TRGS	Technische Regeln für Gefahrstoffe
vPvB	very Persistent, very Bioaccumulative
WGK	Wassergefährdungsklasse

Relevant changes since the last version are highlighted in the margin. This version replaces all previous versions.

Further information

Classification of the mixture:	Classification procedure:
Skin Sens. 1 H317	Calculation method
Repr. 1B H360Fd	Calculation method
STOT SE 3 H335	Calculation method
Aquatic Chronic 2 H411	Calculation method

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Annex

The operational conditions and the implementation of Risk Management Measures (RMM) are dependent on the following priority-/lead substances for the respective exposure routes:

Lead substance(s), aquatic environment:
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate

Lead substance(s), ozone layer:
Not relevant

Lead substance(s), Inhalation:
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No exposure scenarios available

Lead substance(s), Dermal:
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No exposure scenarios available

Lead substance(s), Oral:
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
No exposure scenarios available

Local effects, Skin:
Phenol, 4,4'-(1-methylethylidene)bis-, polymer with 2-(chloromethyl)oxirane, 2-propenoate

Local effects, Inhalation:
Not relevant

Local effects, Eyes:
hexamethylene diacrylate

Attention, advice for uses of the product:
A finalized assessment of save uses is not possible because exposure scenarios are not available for all determined lead substances.

Exposure Scenario

Number	Title
ES1	Formulation or re-packing
ES2	Use at industrial sites; End Use; Formulation.
ES3	Use at industrial sites; End Use; Monomers; Dry polymerisation; Wet polymerisation.
ES4	Widespread use by professional workers

ES1: Formulation or re-packing

1.1. Title section

Exposure Scenario name	:	Formulation or re-packing
Structured Short Title	:	Formulation or re-packing

Environment		
CS1	**Formulation or re-packing** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC2

1.2. Conditions of use affecting exposure

1.2.1. Control of environmental exposure: Formulation into mixture (ERC2) [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]

Product (article) characteristics		
Molar Mass	:	208,3 g/mol
Vapour pressure	:	1,3 Pa at 20 °C
Water solubility	:	19,8 mg/l
Partition coefficient (n−octanol/water)	:	log Pow: 4,52
Biodegradation	:	Inherently biodegradable.
Amount used, frequency and duration of use (or from service life)		
Fraction of regional tonnage used locally:	:	1
Fraction used at main local source:	:	1
Annual amount per site	:	200 tonnes/year
Daily amount per site	:	1000 kg/day
Daily amount per site (Msafe)	:	2.701,449 kg
Critical compartment for Msafe	:	Soil
Emission days	:	200
Remarks	:	days/year
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Sewage sludge incineration
STP effluent	:	2.000 m³/d
Effectiveness (of a measure)	:	100 %
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Incineration
Other conditions affecting environmental exposure		

Receiving surface water flow	:	18.000 m³/d
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

1.3. Exposure estimation and reference to its source

1.3.1. Environmental release and exposure: Formulation into mixture (ERC2) [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]

Release route	Release rate	Release estimation method	Remarks
Waste water	0 %	ERC based estimation	
Air	2,5 %	ERC based estimation	
Soil	0 %	ERC based estimation	

Compartment	Exposure level	RCR	Remarks
Freshwater	0,000000960 mg/L (EasyTRA, EU TGD)	0,001043	
Freshwater sediment	0,000151 mg/kg dry weight (EasyTRA, EU TGD)	0,001045	
Marine water	0,000000154 mg/L (EasyTRA, EU TGD)	0,001677	
Marine sediment	0,000024 mg/kg dry weight (EasyTRA, EU TGD)	0,001679	
STP (sewage-treatment plant)	0 mg/L (EasyTRA, EU TGD)	0	
Soil	0,006336 mg/kg dry weight (EasyTRA, EU TGD)	0,222314	

Additional information on exposure estimation
Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR ≤ 1).

1.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The risk management measures given in this exposure scenario apply to the specified substance in a concentration as indicated in the scenario. The concentration of the substance in the product may differ. A downstream user should evaluate if the risk management measures may be adapted accordingly.
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

ES2: Use at industrial sites; End Use; Formulation.

2.1. Title section

Exposure Scenario name	:	End Use, Formulation
Structured Short Title	:	Use at industrial sites; End Use; Formulation.

Environment		
CS1	**End Use, Formulation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC5

2.2. Conditions of use affecting exposure

2.2.1. Control of environmental exposure: Use at industrial site leading to inclusion into/onto article (ERC5) [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]

Product (article) characteristics		
Molar Mass	:	208,3 g/mol
Vapour pressure	:	1,3 Pa at 20 °C
Water solubility	:	19,8 mg/l
Partition coefficient (n−octanol/water)	:	log Pow: 4,52
Biodegradation	:	Inherently biodegradable.
Amount used, frequency and duration of use (or from service life)		
Fraction of regional tonnage used locally:	:	0,1
Fraction used at main local source:	:	1
Annual amount per site	:	180 tonnes/year
Daily amount per site	:	90 kg/day
Daily amount per site (Msafe)	:	3.947,239 kg
Critical compartment for Msafe	:	Soil
Emission days	:	200
Remarks	:	days/year
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Sewage sludge incineration
STP effluent	:	2.000 m³/d
Effectiveness (of a measure)	:	100 %
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Incineration
Other conditions affecting environmental exposure		

Receiving surface water flow	:	18.000 m³/d
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

2.3. Exposure estimation and reference to its source

2.3.1. Environmental release and exposure: Use at industrial site leading to inclusion into/onto article (ERC5) [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]

Release route	Release rate	Release estimation method	Remarks
Waste water	0 %	ERC based estimation	
Air	1,7 %	SpERC = FEICA 7	
Soil	0 %	ERC based estimation	

Compartment	Exposure level	RCR	Remarks
Freshwater	0,000000960 mg/L (EasyTRA, EU TGD)	0,001043	
Freshwater sediment	0,000151 mg/kg dry weight (EasyTRA, EU TGD)	0,001045	
Marine water	0,000000154 mg/L (EasyTRA, EU TGD)	0,001677	
Marine sediment	0,000024 mg/kg dry weight (EasyTRA, EU TGD)	0,001679	
STP (sewage-treatment plant)	0 mg/L (EasyTRA, EU TGD)	0	
Soil	0,000392 mg/kg dry weight (EasyTRA, EU TGD)	0,013752	

Additional information on exposure estimation
Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR ≤ 1).

2.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The risk management measures given in this exposure scenario apply to the specified substance in a concentration as indicated in the scenario. The concentration of the substance in the product may differ. A downstream user should evaluate if the risk management measures may be adapted accordingly.
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

ES3: Use at industrial sites; End Use; Monomers; Dry polymerisation; Wet polymerisation.

3.1. Title section

Exposure Scenario name	:	End Use, Monomers, Dry polymerisation, Wet polymerisation
Structured Short Title	:	Use at industrial sites; End Use; Monomers; Dry polymerisation; Wet polymerisation.

Environment		
CS1	**End Use, Monomers, Dry polymerisation, Wet polymerisation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC6c

3.2. Conditions of use affecting exposure

3.2.1. Control of environmental exposure: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6c)
[exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]

Product (article) characteristics		
Molar Mass	:	208,3 g/mol
Vapour pressure	:	1,3 Pa at 20 °C
Water solubility	:	19,8 mg/l
Partition coefficient (n−octanol/water)	:	log Pow: 4,52
Biodegradation	:	Inherently biodegradable.
Amount used, frequency and duration of use (or from service life)		
Fraction of regional tonnage used locally:	:	0,1
Fraction used at main local source:	:	1
Annual amount per site	:	1400 tonnes/year
Remarks	:	Dry polymerisation
Annual amount per site	:	400 tonnes/year
Remarks	:	Wet polymerisation
Daily amount per site	:	466,667 kg/day
Remarks	:	Dry polymerisation
Daily amount per site	:	133,333 kg/day
Remarks	:	Wet polymerisation
Daily amount per site (Msafe)	:	87.500 kg
Critical compartment for Msafe	:	Soil
Remarks	:	Dry polymerisation
Daily amount per site (Msafe)	:	3.737,239 kg
Critical compartment for Msafe	:	Marine sediment
Remarks	:	Wet polymerisation
Emission days	:	300

Remarks	:	days/year
Conditions and measures related to sewage treatment plant		
STP type	:	Municipal Sewage Treatment Plant
STP sludge treatment	:	Sewage sludge incineration
STP effluent	:	2.000 m³/d
Effectiveness (of a measure)	:	100 %
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	Incineration
Other conditions affecting environmental exposure		
Receiving surface water flow	:	18.000 m³/d
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

3.3. Exposure estimation and reference to its source

3.3.1. Environmental release and exposure: Use of monomer in polymerisation processes at industrial site (inclusion or not into/onto article) (ERC6c)
[exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]

Release route	Release rate	Release estimation method	Remarks
Waste water	0 %	ERC based estimation	Dry polymerisation
Waste water	0,001 %	ERC based estimation	Wet polymerisation
Air	0,05 %	ERC based estimation	
Soil	0 %	ERC based estimation	

Compartment	Exposure level	RCR	Remarks
Freshwater	0,000000960 mg/L (EasyTRA, EU TGD)	0,001043	Dry polymerisation
Freshwater sediment	0,000151 mg/kg dry weight (EasyTRA, EU TGD)	0,001045	Dry polymerisation
Marine water	0,000000154 mg/L (EasyTRA, EU TGD)	0,001677	Dry polymerisation
Marine sediment	0,000024 mg/kg dry weight (EasyTRA, EU TGD)	0,001679	Dry polymerisation
STP (sewage-treatment plant)	0 mg/L (EasyTRA, EU TGD)	0	Dry polymerisation
Soil	0,000093 mg/kg dry weight (EasyTRA, EU TGD)	0,003266	Dry polymerisation
Freshwater	0,000032 mg/L (EasyTRA, EU TGD)	0,035	Wet polymerisation
Freshwater sediment	0,005081 mg/kg dry weight (EasyTRA, EU TGD)	0,035043	Wet polymerisation
Marine water	0,00000328 mg/L (EasyTRA, EU TGD)	0,035634	Wet polymerisation

Marine sediment	0,000517 mg/kg dry weight (EasyTRA, EU TGD)	0,035677	Wet polymerisation
STP (sewage-treatment plant)	0,000313 mg/L (EasyTRA, EU TGD)	0,000157	Wet polymerisation
Soil	0,00003 mg/kg dry weight (EasyTRA, EU TGD)	0,001045	Wet polymerisation

Additional information on exposure estimation
Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR ≤ 1).

3.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The risk management measures given in this exposure scenario apply to the specified substance in a concentration as indicated in the scenario. The concentration of the substance in the product may differ. A downstream user should evaluate if the risk management measures may be adapted accordingly.
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.

ES4: Widespread use by professional workers

4.1. Title section

Exposure Scenario name	:	End Use, Formulation
Structured Short Title	:	Widespread use by professional workers

Environment		
CS1	**End Use, Formulation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC8c, ERC8f

4.2. Conditions of use affecting exposure

4.2.1. Control of environmental exposure: Widespread use leading to inclusion into/onto article (indoor) (ERC8c) / Widespread use leading to inclusion into/onto article (outdoor) (ERC8f) [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]

Product (article) characteristics		
Molar Mass	:	208,3 g/mol
Vapour pressure	:	1,3 Pa at 20 °C
Water solubility	:	19,8 mg/l
Partition coefficient (n−octanol/water)	:	log Pow: 4,52
Biodegradation	:	Inherently biodegradable.
Amount used, frequency and duration of use (or from service life)		
Fraction of regional tonnage used locally:	:	1
Fraction used at main local source:	:	0,002
Annual amount per site	:	20 tonnes/year
Daily amount per site	:	0,109589 kg/day
Daily amount per site (Msafe)	:	1,791 kg
Critical compartment for Msafe	:	Marine sediment
Emission days	:	365
Remarks	:	days/year
Conditions and measures related to treatment of waste (including article waste)		
Waste treatment	:	External treatment and disposal of waste should comply with applicable local and/or national regulations.
Other conditions affecting environmental exposure		
Local freshwater dilution factor	:	10
Local marine water dilution factor	:	100

4.3. Exposure estimation and reference to its source

4.3.1. Environmental release and exposure: Widespread use leading to inclusion into/onto article (indoor) (ERC8c) / Widespread use leading to inclusion into/onto article (outdoor) (ERC8f) [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]

Release route	Release rate	Release estimation method	Remarks
Waste water	1 %	ERC based estimation	
Air	15 %	ERC based estimation	
Soil	0,5 %	ERC based estimation	

Compartment	Exposure level	RCR	Remarks
Freshwater	0,000056 mg/L (EasyTRA, EU TGD)	0,060465	
Freshwater sediment	0,008778 mg/kg dry weight (EasyTRA, EU TGD)	0,060538	
Marine water	0,00000562 mg/L (EasyTRA, EU TGD)	0,061099	
Marine sediment	0,000887 mg/kg dry weight (EasyTRA, EU TGD)	0,061173	
Soil	0,00000444 mg/kg dry weight (EasyTRA, EU TGD)	0,000156	

Additional information on exposure estimation
Based on the applied RMMs the risk towards environment is sufficiently controlled (RCR ≤ 1).

4.4. Guidance to DU to evaluate whether he works inside the boundaries set by the ES

The risk management measures given in this exposure scenario apply to the specified substance in a concentration as indicated in the scenario. The concentration of the substance in the product may differ. A downstream user should evaluate if the risk management measures may be adapted accordingly.
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Where other risk management measures/operational conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.