Manufacturer:
Covestro

Product Name:
Covestro Desolite® 3471-1-129A Primary Optical Fiber Coating, UV Cure (10 kg)

Manufacturer Part Number:
COV-3471-1-129A-10KG

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

DeSolite 3471-1-129A

Version 2.0 Revision Date 01.08.2025 Print Date 02.08.2025

This document is formatted for A4 paper size

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

1.1 Product identifier

DESOLITE 3471-1-129A

Material number: 50025032

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

Skin irritation, Category 2 (H315)
Eye irritation, Category 2 (H319)
Sensitization of the skin, Category 1 (H317)
Reproductive toxicity, Category 1B (H360F)
Specific target organ toxicity (single exposure), Category 3 (H335 (Respiratory system))
Specific target organ toxicity (repeated exposure), Category 2 (H373)
Chronically hazardous to the aquatic environment, Category 2 (H411)

2.2 Label elements

Danger

Hazardous components which must be listed on the label
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
1-Vinylhexahydro-2H-azepin-2-one
Dodecyl acrylate
diphenyl(2,4,6-trimethylbenzoyl)phosphine oxide
3-Trimethoxysilylpropane-1-thiol

Hazard statements:
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.

H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H360F May damage fertility.
H373 May cause damage to organs through prolonged or repeated exposure.
H411 Toxic to aquatic life with long lasting effects.

Precautionary statements:
P201 Obtain special instructions before use.
P260 Do not breathe 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

The following percentage of the mixture consists of ingredient(s) with unknown acute dermal toxicity: 21 %
The following percentage of the mixture consists of ingredient(s) with unknown acute inhalation toxicity: 21 %

The following percentage of the mixture consists of ingredient(s) with unknown hazards to the aquatic environment: 21 %

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

Ethoxylated nonyl phenol acrylate
Concentration [wt.-%]: >= 20 - < 25
EC-No.: 614-163-6
CAS-No.: 678991-31-6
Classification (1272/2008/CE): Skin Irrit. 2 H315 Eye Irrit. 2 H319

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

1-Vinylhexahydro-2H-azepin-2-one
Concentration [wt.-%]: >= 5 - < 10
EC-No.: 218-787-6
CAS-No.: 2235-00-9
Classification (1272/2008/CE): Acute Tox. 4 Oral H302 Acute Tox. 4 Dermal H312 Eye Irrit. 2 H319 Skin Sens. 1B H317 STOT RE 1 H372 (Liver, Respiratory tract)
ATE (oral): 1.114 mg/kg
ATE (dermal): 1.700 mg/kg

Dodecyl acrylate
Concentration [wt.-%]: >= 5 - < 10
Index-No.: 607-133-00-9

EC-No.: 218-463-4
REACH Registration Number: 01-2119976296-23-0009
CAS-No.: 2156-97-0
Classification (1272/2008/CE): Skin Irrit. 2 H315 Eye Irrit. 2 H319 Skin Sens. 1 H317 STOT SE 3 H335 (Respiratory system) Aquatic Chronic 2 H411
Specific threshold concentration (GHS):
STOT SE 3 H335 >= 10 %

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

3-Trimethoxysilylpropane-1-thiol
Concentration [wt.-%]: >= 0,3 - < 1
EC-No.: 224-588-5
CAS-No.: 4420-74-0
Classification (1272/2008/CE): Acute Tox. 4 Oral H302 Skin Sens. 1B H317 Aquatic Chronic 2 H411
ATE (oral): 741 mg/kg

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Concentration [wt.-%]: >= 0,025 - < 0,1
EC-No.: 500-209-1
CAS-No.: 68412-54-4
Classification (1272/2008/CE): Aquatic Acute 1 H400 Aquatic Chronic 1 H410
M-factor (acute aquat. tox.): 1
M-factor (chron. aquat. tox.): 10

The polymer or the polymers including their impurities are exempted from the provisions on registration according to article 2(9) of the REACH Regulation (EC) No 1907/2006, hence no annex is provided. The necessary information about operational conditions and Risk Management Measures (RMM) can be found in section 8 of this SDS.

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. Wear a positive-pressure supplied-air respirator with full facepiece. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to European standard EN 469 will provide a basic level of protection for chemical incidents.

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

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL)

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	

1-Vinylhexahydro-2H-azepin-2-one

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	4,9 mg/m3	Most sensitive endpoint: Repeated dose toxicity
Workers	Inhalation	Acute systemic effects		No hazard identified
Workers	Inhalation	Long-term local effects	0,17 mg/m3	Most sensitive endpoint: Repeated dose toxicity
Workers	Inhalation	Acute local effects		Low hazard (no threshold derived)
Workers	Dermal	Long-term systemic effects	0,7 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity
Workers	Dermal	Acute systemic effects		Low hazard (no threshold derived)
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		Low hazard (no threshold derived)
Consumers	Inhalation	Long-term systemic effects	1,04 mg/m3	Most sensitive endpoint: Repeated dose toxicity
Consumers	Inhalation	Acute systemic effects		No hazard identified
Consumers	Inhalation	Long-term local effects	0,04 mg/m3	Most sensitive endpoint: Repeated dose toxicity
Consumers	Inhalation	Acute local effects		Low hazard (no threshold derived)
Consumers	Dermal	Long-term systemic effects	0,3 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity
Consumers	Dermal	Acute systemic effects		Low hazard (no threshold derived)
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	0,33 mg/kg bw/day	Most sensitive endpoint: Repeated dose toxicity
Consumers	Oral	Acute systemic effects		Low hazard (no threshold derived)
Consumers	Eye contact	Local effects		Medium hazard (no threshold derived)

Dodecyl acrylate

Value type	Route of exposure	Health Effects	Value	Remarks
Workers	Inhalation	Long-term systemic effects	97,9 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	138,9 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		High hazard (no threshold derived) Most sensitive endpoint: skin irritation/corrosion
Workers	Dermal	Acute local effects		High hazard (no threshold derived) 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		Low hazard (no threshold derived) Most sensitive endpoint: skin irritation/corrosion
Consumers	Dermal	Acute local effects		Low hazard (no threshold derived) Most sensitive endpoint: skin irritation/corrosion
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

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

Predicted No Effect Concentration (PNEC)

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	

1-Vinylhexahydro-2H-azepin-2-one

Compartment	Value	Remarks
Fresh water	0,575 mg/l	
Fresh water sediment	4,77 mg/kg dry weight	
Marine water	0,058 mg/l	
Marine sediment	0,477 mg/kg dry weight	
Sewage treatment plant	262 mg/l	
Air		No hazard identified
Soil	0,615 mg/kg dry weight	
Oral		Does not bioaccumulate.
Intermittent use/release	1 mg/l	Fresh water

Dodecyl acrylate

Compartment	Value	Remarks
Fresh water		No hazard identified
Fresh water sediment		No hazard identified
Marine water		No hazard identified
Marine sediment		No hazard identified
Sewage treatment plant		No hazard identified
Air		No hazard identified
Soil		No hazard identified
Oral		Does not bioaccumulate.

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

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
Respirator with a gas filter

If applicable, further recommendations regarding respiratory protection can be found in the annex.

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
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:	0,9 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:	5.000 - 8.000 mPa.s at 20 °C
Viscosity, kinematic:	> 20,5 mm²/s at 40 °C
	> 4166 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
ATEmix (oral): > 2.000 mg/kg
Method: Calculation method

Ethoxylated nonyl phenol acrylate
LD50 rat: > 5.000 mg/kg

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

1-Vinylhexahydro-2H-azepin-2-one
LD50 rat, male/female: 1.114 mg/kg
Method: OECD Test Guideline 401

LD50 rat, male/female: 1.864 mg/kg
Method: OECD Test Guideline 401

Dodecyl acrylate
LD50 rat, male/female: > 5.570 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

3-Trimethoxysilylpropane-1-thiol
LD50 rat, male: 893 mg/kg
Method: OECD Test Guideline 401

LD50 rat, female: 741 mg/kg
Method: OECD Test Guideline 401

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
LD50 rat: 8.400 mg/kg
Studies of a comparable product.

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

Ethoxylated nonyl phenol acrylate
Assessment: No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
LD50 rabbit, male/female: 1.700 mg/kg
Method: OECD Test Guideline 402

Dodecyl acrylate
LD50 rat, male/female: > 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

3-Trimethoxysilylpropane-1-thiol
LD50 rabbit, male/female: > 2.000 mg/kg
Method: OECD Test Guideline 402

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
LD50 rabbit: > 3.000 mg/kg
Studies of a comparable product.

Acute toxicity, inhalation
Ethoxylated nonyl phenol acrylate
Assessment: No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
LC50 rat, male/female: > 1,6 mg/l, 8 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Dodecyl acrylate
LC50 rat, male/female: > 0,69 mg/l, 6 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

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

3-Trimethoxysilylpropane-1-thiol
rat, male/female:
Test atmosphere: vapour
Assessment: The substance or mixture has no acute inhalation toxicity
Method: OECD Test Guideline 403
An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Assessment: no data available
Studies of a comparable product.

Primary skin irritation
Ethoxylated nonyl phenol acrylate
Result: irritating
Classification: Causes skin irritation.

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

1-Vinylhexahydro-2H-azepin-2-one
Species: rabbit
Result: slight irritant
Classification: No skin irritation
Method: OECD Test Guideline 404

Dodecyl acrylate
Species: rabbit
Result: irritating
Classification: Causes skin irritation.
Method: OECD Test Guideline 404

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

3-Trimethoxysilylpropane-1-thiol
Species: rabbit
Result: non-irritant
Classification: No skin irritation
Method: OECD Test Guideline 404

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Species: rabbit
Result: non-irritant
Classification: No skin irritation

Primary mucosae irritation
Ethoxylated nonyl phenol acrylate
Result: irritating
Classification: Causes serious eye irritation.

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

1-Vinylhexahydro-2H-azepin-2-one
Species: rabbit
Result: irritating
Classification: Causes serious eye irritation.
Method: OECD Test Guideline 405

Dodecyl acrylate
Species: rabbit
Result: irritating
Classification: Causes serious eye irritation.
Method: OECD Test Guideline 405

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

3-Trimethoxysilylpropane-1-thiol
Species: rabbit
Result: slight irritant
Classification: No eye irritation
Method: OECD Test Guideline 405

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Species: rabbit
Result: non-irritant
Classification: No eye irritation

Sensitisation
Ethoxylated nonyl phenol acrylate
Skin sensitisation:
No data available.

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.

1-Vinylhexahydro-2H-azepin-2-one
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.

Dodecyl acrylate
Skin sensitisation:
Result: positive
Classification: May cause sensitization by skin contact.

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.

3-Trimethoxysilylpropane-1-thiol
Skin sensitisation according to Buehler (epicutaneous test):
Species: Guinea pig
Result: positive
Classification: May cause sensitization by skin contact (Sub cat. 1B)
Method: OECD Test Guideline 406

Respiratory sensitization
No data available.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Skin sensitisation according to Magnusson/Kligmann (maximizing test):
Species: Guinea pig
Result: negative
Classification: Does not cause skin sensitization.
Method: OECD Test Guideline 406
Studies of a comparable product.

Respiratory sensitization
No data available.

Subacute, subchronic and prolonged toxicity
Ethoxylated nonyl phenol acrylate
NOAEL: 40 mg/kg
Species: rat, male/female
Exposure duration: 90 d

NOAEL: 200 mg/kg
Species: rat, male/female
Exposure duration: 2 Years

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

1-Vinylhexahydro-2H-azepin-2-one
NOAEL: < 130 mg/kg bw/day
Application Route: Oral
Species: rat, male/female
Exposure duration: 90 d
Frequency of treatment: 5 days/week
Method: OECD Test Guideline 408

NOAEL: 40 mg/kg
Application Route: Oral
Species: rat, male/female
Dose Levels: 0 - 40 - 120 - 400 mg/kg bw/day
Frequency of treatment: daily
Target Organs: Liver
Assessment: Causes damage to organs through prolonged or repeated exposure.
Method: OECD Test Guideline 422

NOAEL: 10 ppm
LOAEL (Lowest observable adverse effect level): 32 ppm
Application Route: inhalation (vapour)
Species: rat, male/female
Dose Levels: 0 - 1 - 10 - 32 ppm
Exposure duration: 90 d
Frequency of treatment: 6 hours a day, 5 days a week
Method: OECD Test Guideline 413

NOAEL: 1 mg/m³

Application Route: inhalation (vapour)
Species: rat, male/female
Dose Levels: 0 - 1 - 6 - 58 - 173 mg/m³
Exposure duration: 28 d
Frequency of treatment: 5 days/week
Target Organs: Respiratory tract
Assessment: Causes damage to organs through prolonged or repeated exposure.
Method: OECD Test Guideline 412

Dodecyl acrylate
NOAEL: 1.000 mg/kg
Application Route: Oral
Species: rat, male/female
Frequency of treatment: daily
Method: OECD Test Guideline 422

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

3-Trimethoxysilylpropane-1-thiol
No data available.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
NOAEL: 50 mg/kg
LOAEL (Lowest observable adverse effect level): 150 mg/kg
Application Route: Oral
Species: rat, male/female
Exposure duration: 90 d
Frequency of treatment: daily
Studies of a comparable product.

NOAEL: 100 mg/kg
LOAEL (Lowest observable adverse effect level): 400 mg/kg
Application Route: Oral
Species: rat, male/female
Dose Levels: 25 - 100 - 400
Exposure duration: 28 d
Frequency of treatment: daily
Method: OECD Test Guideline 407
Studies of a comparable product.

Carcinogenicity
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
No data available.

Dodecyl acrylate
No data available.

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

3-Trimethoxysilylpropane-1-thiol
No data available.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
No data available.

Reproductive toxicity/Fertility
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
NOAEL (parents, generelly toxicity): 40 mg/kg bw/day
NOAEL (parents, fertility): >400 mg/kg bw/day
NOAEL (offspring): 120 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 - 40 - 120 - 400 mg/kg bw/day
Frequency of treatment: daily
Method: OECD Test Guideline 422

Dodecyl acrylate
NOAEL - Parents: 1.000 mg/kg
NOAEL – F1: 1.000 mg/kg
Test type: Combined Repeated Dose Toxicity Study with the Reproduction/Developmental Toxicity Screening Test
Species: rat, male/female
Application Route: Oral
Frequency of treatment: daily
Method: OECD Test Guideline 422

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

3-Trimethoxysilylpropane-1-thiol
No data available.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
No data available.

Reproductive toxicity/Developmental Toxicity/Teratogenicity
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
NOAEL (maternal): 20 mg/kg bw/day
NOAEL (developmental toxicity): 80 mg/kg bw/day
LOAEL (developmental toxicity): 240 mg/kg bw/day
Species: rat, female
Application Route: Oral
Frequency of treatment: daily
Method: OECD Test Guideline 414

Dodecyl acrylate
NOAEL (teratogenicity): 1.000 mg/kg
NOAEL (maternal): 1.000 mg/kg
NOAEL (developmental toxicity): 1000 mg/kg body weight/day
Species: rat, male and female
Application Route: Oral
Frequency of treatment: daily
Method: OECD Test Guideline 422

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

3-Trimethoxysilylpropane-1-thiol
No data available.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
No data available.

Genotoxicity in vitro
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
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 fibroblasts
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476

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

Dodecyl acrylate
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

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

Test type: Chromosome aberration test in vitro
Test system: Chinese hamster V79 cell line
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 487

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

3-Trimethoxysilylpropane-1-thiol
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 490

Test type: Chromosome aberration test in vitro
Test system: Chinese hamster V79 cell line
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 473

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Test type: Ames test
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 471
Studies of a comparable product.

Test type: Chromosome aberration test in vitro
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 473
Studies of a comparable product.

Test type: In vitro mammalian cell gene mutation test
Metabolic activation: with/without
Result: negative
Method: OECD Test Guideline 476
Studies of a comparable product.

Genotoxicity in vivo
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
No data available.

Dodecyl acrylate
No data available.

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

3-Trimethoxysilylpropane-1-thiol
No data available.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
No data available.

STOT evaluation – one-time exposure
Ethoxylated nonyl phenol acrylate
No data available.

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

1-Vinylhexahydro-2H-azepin-2-one
Based on available data, the classification criteria are not met.

Dodecyl acrylate
May cause respiratory irritation.

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

3-Trimethoxysilylpropane-1-thiol
Based on available data, the classification criteria are not met.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Based on available data, the classification criteria are not met.

STOT evaluation – repeated exposure
Ethoxylated nonyl phenol acrylate
No data available.

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

1-Vinylhexahydro-2H-azepin-2-one
Target Organs: Liver, Respiratory tract
Causes damage to organs through prolonged or repeated exposure.

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

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

3-Trimethoxysilylpropane-1-thiol
No data available.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Based on available data, the classification criteria are not met.

Aspiration toxicity

Ethoxylated nonyl phenol acrylate
No data available.

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

1-Vinylhexahydro-2H-azepin-2-one
Based on available data, the classification criteria are not met.

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

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

3-Trimethoxysilylpropane-1-thiol
Based on available data, the classification criteria are not met.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Based on available data, the classification criteria are not met.

CMR Assessment
Ethoxylated nonyl phenol acrylate
Carcinogenicity: No data available.
Mutagenicity: No data available.
Teratogenicity: No data available.
Reproductive toxicity/Fertility: No data available.

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.

1-Vinylhexahydro-2H-azepin-2-one
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.

Dodecyl 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.

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).

3-Trimethoxysilylpropane-1-thiol
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.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
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.

Toxicology Assessment
Ethoxylated nonyl phenol acrylate
Acute effects: Causes skin irritation. Causes serious eye irritation.
Sensitization: no data available

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.

1-Vinylhexahydro-2H-azepin-2-one
Acute effects: Harmful if swallowed. Harmful in contact with skin. Causes serious eye irritation.
Sensitization: May cause an allergic skin reaction.

Dodecyl acrylate
Acute effects: Causes skin irritation. Causes serious eye irritation.
Sensitization: May cause an allergic skin reaction.

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.

3-Trimethoxysilylpropane-1-thiol
Acute effects: Harmful if swallowed.
Sensitization: May cause an allergic skin reaction.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Acute effects: Based on available data, the classification criteria are not met.
Sensitization: Based on available data, the classification criteria are not met.

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
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
LC50 318 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: OECD Test Guideline 203

Dodecyl acrylate
LC50 ca. 460 mg/l
Species: Leuciscus idus (Golden orfe)
Exposure duration: 96 h

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

3-Trimethoxysilylpropane-1-thiol
LC50 439 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 96 h
Method: Regulation (EC) No. 440/2008, Annex, C.1

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
LC50 0,323 mg/l
Species: Pimephales promelas (fathead minnow)
Exposure duration: 96 h
Studies of a comparable product.

Chronic Fish toxicity
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
NOEC > 10 mg/l
Species: Danio rerio (zebra fish)
Exposure duration: 36 d
Method: OECD Test Guideline 210

Dodecyl acrylate
No data available.

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

3-Trimethoxysilylpropane-1-thiol
No data available.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
NOEC (Growth inhibition) 6 µg/l
Species: Fish
Exposure duration: 91 d
Studies of a comparable product.

Acute toxicity for daphnia
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
EC50 > 100 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: OECD Test Guideline 202

Dodecyl acrylate
no data available

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

3-Trimethoxysilylpropane-1-thiol
EC50 6,7 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 48 h
Method: Regulation (EC) No. 440/2008, Annex, C.2

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
LC50 0,716 mg/l
Species: Ceriodaphnia dubia
Exposure duration: 48 h
Studies of a comparable product.

Chronic toxicity to daphnia
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
NOEC 5,75 mg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: calculated

Dodecyl acrylate
NOEC >= 100 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.

3-Trimethoxysilylpropane-1-thiol
No data available.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
NOEC (Reproduction) 100 µg/l
Species: Daphnia magna (Water flea)
Exposure duration: 21 d
Method: OECD Test Guideline 211
Studies of a comparable product.

Acute toxicity for algae
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
EC50 > 100 mg/l
endpoint: Growth inhibition
Species: Desmodesmus subspicatus (green algae)
Exposure duration: 72 h

NOEC 25 mg/l
endpoint: Growth inhibition
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h

Dodecyl acrylate
EC50 51,6 mg/l
Species: scenedesmus subspicatus
Exposure duration: 72 h

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

3-Trimethoxysilylpropane-1-thiol
NOEC 40 mg/l
endpoint: Growth inhibition
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: Regulation (EC) No. 440/2008, Annex, C.3

EC50 931 mg/l
endpoint: Growth inhibition
Species: Desmodesmus subspicatus (Green algae)
Exposure duration: 72 h
Method: Regulation (EC) No. 440/2008, Annex, C.3

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
EC10 1,22 mg/l
endpoint: Growth inhibition
Species: Pseudokirchneriella subcapitata (green algae)

Exposure duration: 72 h
Method: OECD Test Guideline 201
Studies of a comparable product.

Acute bacterial toxicity
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
EC50 622 mg/l
Species: Pseudomonas putida
Exposure duration: 16 h
Method: DIN 38412, part 8

Dodecyl acrylate
EC50 > 10.000 mg/l
Species: Pseudomonas putida
Exposure duration: 30 h

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

3-Trimethoxysilylpropane-1-thiol
EC50 463 mg/l
Species: activated sludge

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
EC20 > 1.000 mg/l
Species: activated sludge
Exposure duration: 3 h
Method: OECD Test Guideline 209
Studies of a comparable product.

Ecotoxicology Assessment
Ethoxylated nonyl phenol acrylate
Acute aquatic toxicity: no data available
Chronic aquatic toxicity: Based on available data, the classification criteria are not met.

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.

1-Vinylhexahydro-2H-azepin-2-one
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: Based on available data, the classification criteria are not met.

Dodecyl 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.

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.

3-Trimethoxysilylpropane-1-thiol
Acute aquatic toxicity: Based on available data, the classification criteria are not met.
Chronic aquatic toxicity: Toxic to aquatic life with long lasting effects.

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Acute aquatic toxicity: Very toxic to aquatic life.
Chronic aquatic toxicity: Very toxic to aquatic life with long lasting effects.

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

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
M-factor (acute aquat. tox.): 1
M-factor (chron. aquat. tox.): 10

12.2 Persistence and degradability

Biodegradability
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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

1-Vinylhexahydro-2H-azepin-2-one
Test type: aerobic
Inoculum: activated sludge
Biodegradation: 30 - 40 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 301 A

Dodecyl acrylate
Test type: aerobic
Inoculum: activated sludge
Biodegradation: 80 - 90 %, 28 d, i.e. not readily degradable
Method: OECD Test Guideline 301 B

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

3-Trimethoxysilylpropane-1-thiol
Test type: aerobic
Inoculum: activated sludge
Biodegradation: 51 %, 28 d, i.e. not readily degradable
Method: Regulation (EC) No. 440/2008, Annex, C.4-A

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
Biodegradation: 58,7 %, 35 d, i.e. not readily degradable
Method: OECD Test Guideline 301 B
Studies of a comparable product.

12.3 Bioaccumulative potential

Bioaccumulation
Ethoxylated nonyl phenol acrylate
No data available, supplier information

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.

1-Vinylhexahydro-2H-azepin-2-one
No bioaccumulation is to be expected (log Pow <= 4).

Dodecyl acrylate
Bioconcentration factor (BCF): 381,4
Method: (calculated)

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

3-Trimethoxysilylpropane-1-thiol
no data available

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
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)

12.4 Mobility in soil

No data available.

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. (Isobornyl Acrylate, Ethoxylated Isononylphenol)
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. (Isobornyl Acrylate, Ethoxylated Isononylphenol)
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. (Isobornyl Acrylate, Ethoxylated Isononylphenol)
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. (Isobornyl Acrylate, Ethoxylated Isononylphenol)
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

This product contains substances subject to EU Regulation 1907/2006 (REACH), Annex XVII.

Ethoxylated nonyl phenol acrylate
CAS-No.: 678991-31-6, EC-No.: 614-163-6
Subject to REACH Annex XVII, No. 3

1-Vinylhexahydro-2H-azepin-2-one
CAS-No.: 2235-00-9, EC-No.: 218-787-6
Subject to REACH Annex XVII, No. 3

Regulation (EU) No 649/2012 concerning the export and import of hazardous chemicals
This product is subject to Regulation (EU) No 649/2012. It contains:

nonylphenol, branched and linear, ethoxylated (with average molecular weight ≤ 1 540 g/mol) [includes ortho-, meta-, para-isomers or any combination thereof]
CAS-No.: 68412-54-4, EC-No.: 500-209-1

TA Luft List (Germany)
Type: 5.2.1 Total dust
Fraction of other substances: 0,03 %

Type: 5.2.5 Organic Substances
portion Class 1: 7,77 %

Fraction of other substances: 92,14 %

Type: 5.2.7.1.1 Carcinogenic substance
portion Class 1: < 0,01 %

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

Other regulations
Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.
Take note of Law on the protection of mothers at work, in education and in studies (Maternity Protection Act - MuSchG).
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
Dodecyl acrylate

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.
H312	Harmful in contact with skin.
H315	Causes skin irritation.
H317	May cause an allergic skin reaction.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.
H360F	May damage fertility.
H360Fd	May damage fertility. Suspected of damaging the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
H411	Toxic to aquatic life with long lasting effects.

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 Irrit. 2 H315	Calculation method
Eye Irrit. 2 H319	Calculation method
Skin Sens. 1 H317	Calculation method
Repr. 1B H360F	Calculation method
STOT SE 3 H335	Calculation method
STOT RE 2 H373	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:
1-Vinylhexahydro-2H-azepin-2-one
No exposure scenarios available

Lead substance(s), Oral:
Not relevant

Local effects, Skin:
Ethoxylated nonyl phenol acrylate
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate
For RMMs see chapter 8 of the SDS.

Local effects, Inhalation:
Dodecyl acrylate

Local effects, Eyes:
Ethoxylated nonyl phenol acrylate
For RMMs see chapter 8 of the SDS.

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; Polymerisation; On site; AND; Used as monomer at downstream industrial sites.
ES3	Use at industrial sites; Use of preparations containing the substance: industrial.
ES4	Use at industrial sites; Used as laboratory reagent.
ES5	Use at industrial sites; Use as an intermediate.
ES6	Widespread use by professional workers

ES1: Formulation or re-packing

1.1. Title section

Exposure Scenario name	:	Formulation
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
Worker		
CS2	**Formulation** [Dodecyl acrylate]	PROC3
CS3	**Formulation** [Dodecyl acrylate]	PROC5
CS4	**Formulation** [Dodecyl acrylate]	PROC8a
CS5	**Formulation** [Dodecyl acrylate]	PROC8b
CS6	**Formulation** [Dodecyl acrylate]	PROC9

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

1.2.2. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) [Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle substance within a predominantly closed system.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	240 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

1.2.3. Control of worker exposure: Mixing or blending in batch processes (PROC5) [Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in	:	100%

Mixture/Article		
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
No specific measures identified.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

1.2.4. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Ensure good ventilation. Inhalation - minimum efficiency of 30 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	960 cm² (both hands)
Indoor or outdoor use	:	Indoor

1.2.5. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle in semi-closed process with occasional controlled exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	960 cm² (both hands)
Indoor or outdoor use	:	Indoor

1.2.6. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle in semi-closed process with occasional controlled exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		

Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

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).

1.3.2. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) [Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	30,048 mg/m³ (EasyTRA)	0,306922	
dermal, systemic, long-term	0,137143 mg/kg bw/day (EasyTRA)	0,000987	

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

1.3.3. Worker exposure: Mixing or blending in batch processes (PROC5) [Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks

inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

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

1.3.4. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	70,111 mg/m³ (EasyTRA)	0,716152	
dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

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

1.3.5. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

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

1.3.6. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	1,371 mg/kg bw/day (EasyTRA)	0,009873	

Additional information on exposure estimation
Based on the applied RMMs the risk towards humans 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; Polymerisation; On site; AND; Used as monomer at downstream industrial sites.

2.1. Title section

Exposure Scenario name	:	Polymerisation, On site, AND, Used as monomer at downstream industrial sites
Structured Short Title	:	Use at industrial sites; Polymerisation; On site; AND; Used as monomer at downstream industrial sites.

Environment		
CS1	**End Use, Formulation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC5
CS2	**End Use, Monomers, Dry polymerisation, Wet polymerisation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC6c
Worker		
CS3	**Polymerisation, On site, AND, Used as monomer at downstream industrial sites** [Dodecyl acrylate]	PROC1
CS4	**Polymerisation, On site, AND, Used as monomer at downstream industrial sites** [Dodecyl acrylate]	PROC2
CS5	**Polymerisation, On site, AND, Used as monomer at downstream industrial sites** [Dodecyl acrylate]	PROC3
CS6	**Polymerisation, On site, AND, Used as monomer at downstream industrial sites** [Dodecyl acrylate]	PROC4, PROC9
CS7	**Polymerisation, On site, AND, Used as monomer at downstream industrial sites** [Dodecyl acrylate]	PROC5
CS8	**Polymerisation, On site, AND, Used as monomer at downstream industrial sites** [Dodecyl acrylate]	PROC8a
CS9	**Polymerisation, On site, AND, Used as monomer at downstream industrial sites** [Dodecyl acrylate]	PROC8b

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

2.2.2. 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

2.2.3. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle substance within a closed system.		

Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	240 cm² (palm of one hand)
Indoor or outdoor use	:	Indoor

2.2.4. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) [Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle substance within a predominantly closed system.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

2.2.5. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) [Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		

Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle substance within a predominantly closed system.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	240 cm² (palm of one hand)
Indoor or outdoor use	:	Indoor

2.2.6. Control of worker exposure: Chemical production where opportunity for exposure arises (PROC4) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) [Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle in semi-closed process with occasional controlled exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

2.2.7. Control of worker exposure: Mixing or blending in batch processes (PROC5) [Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%

Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
No specific measures identified.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

2.2.8. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Ensure good ventilation. Inhalation - minimum efficiency of 30 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	960 cm² (both hands)
Indoor or outdoor use	:	Indoor

2.2.9. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle in semi-closed process with occasional controlled exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	960 cm² (both hands)
Indoor or outdoor use	:	Indoor

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).

2.3.2. 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).

2.3.3. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
[Dodecyl acrylate]

Exposure route	**Exposure level**	**RCR**	**Remarks**

inhalative, systemic, long-term	0,100159 mg/m³ (EasyTRA)	0,001023	
dermal, systemic, long-term	0,006857 mg/kg bw/day (EasyTRA)	0,000049	

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

2.3.4. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) [Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	10,016 mg/m³ (EasyTRA)	0,102307	
dermal, systemic, long-term	0,274286 mg/kg bw/day (EasyTRA)	0,001975	

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

2.3.5. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) [Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	30,048 mg/m³ (EasyTRA)	0,306922	
dermal, systemic, long-term	0,137143 mg/kg bw/day (EasyTRA)	0,000987	

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

2.3.6. Worker exposure: Chemical production where opportunity for exposure arises (PROC4) / Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9) [Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	1,371 mg/kg bw/day (EasyTRA)	0,009873	

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

2.3.7. Worker exposure: Mixing or blending in batch processes (PROC5) [Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	

dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

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

2.3.8. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	70,111 mg/m³ (EasyTRA)	0,716152	
dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

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

2.3.9. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

Additional information on exposure estimation
Based on the applied RMMs the risk towards humans 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; Use of preparations containing the substance: industrial.

3.1. Title section

Exposure Scenario name	:	Use of preparations containing the substance: industrial
Structured Short Title	:	Use at industrial sites; Use of preparations containing the substance: industrial.

Environment		
CS1	**End Use, Formulation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC5
CS2	**End Use, Monomers, Dry polymerisation, Wet polymerisation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC6c
Worker		
CS3	**Use of preparations containing the substance: industrial** [Dodecyl acrylate]	PROC5
CS4	**Use of preparations containing the substance: industrial** [Dodecyl acrylate]	PROC7
CS5	**Use of preparations containing the substance: industrial** [Dodecyl acrylate]	PROC9

3.2. Conditions of use affecting exposure

3.2.1. 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

3.2.2. 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

3.2.3. Control of worker exposure: Mixing or blending in batch processes (PROC5)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
No specific measures identified.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

3.2.4. Control of worker exposure: Industrial spraying (PROC7)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%

Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Local exhaust ventilation is required. Inhalation - minimum efficiency of 95 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Irrespective of the stated risk management measures respiratory protection is generally recommended for spraying applications.		
Other conditions affecting workers exposure		
Exposed skin area	:	1500 cm² (both hands and forearms)
Indoor or outdoor use	:	Indoor

3.2.5. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle in semi-closed process with occasional controlled exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)

Indoor or outdoor use	:	Indoor

3.3. Exposure estimation and reference to its source

3.3.1. 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).

3.3.2. 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	0 mg/L (EasyTRA, EU TGD)	0	Dry polymerisation

plant)			
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).

3.3.3. Worker exposure: Mixing or blending in batch processes (PROC5)
[Dodecyl acrylate]

Exposure route	**Exposure level**	**RCR**	**Remarks**
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

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

3.3.4. Worker exposure: Industrial spraying (PROC7)
[Dodecyl acrylate]

Exposure route	**Exposure level**	**RCR**	**Remarks**
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	8,571 mg/kg bw/day (EasyTRA)	0,061709	

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

3.3.5. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)
[Dodecyl acrylate]

Exposure route	**Exposure level**	**RCR**	**Remarks**
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	1,371 mg/kg bw/day (EasyTRA)	0,009873	

Additional information on exposure estimation
Based on the applied RMMs the risk towards humans 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: Use at industrial sites; Used as laboratory reagent.

4.1. Title section

Exposure Scenario name	:	Used as laboratory reagent
Structured Short Title	:	Use at industrial sites; Used as laboratory reagent.

Environment		
CS1	**End Use, Formulation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC5
CS2	**End Use, Monomers, Dry polymerisation, Wet polymerisation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC6c
Worker		
CS3	**Used as laboratory reagent** [Dodecyl acrylate]	PROC15

4.2. Conditions of use affecting exposure

4.2.1. 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

4.2.2. 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

4.2.3. Control of worker exposure: Use as laboratory reagent (PROC15) [Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
No specific measures identified.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	240 cm² (palm of one hand)
Indoor or outdoor use	:	Indoor

4.3. Exposure estimation and reference to its source

4.3.1. 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).

4.3.2. 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).

4.3.3. Worker exposure: Use as laboratory reagent (PROC15) [Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	0,068571 mg/kg bw/day (EasyTRA)	0,000494	

Additional information on exposure estimation
Based on the applied RMMs the risk towards humans 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.

ES5: Use at industrial sites; Use as an intermediate.

5.1. Title section

Exposure Scenario name	:	Use as an intermediate
Structured Short Title	:	Use at industrial sites; Use as an intermediate.

Environment		
CS1	**End Use, Formulation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC5
CS2	**End Use, Monomers, Dry polymerisation, Wet polymerisation** [exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl acrylate]	ERC6c
Worker		
CS3	**Use as an intermediate** [Dodecyl acrylate]	PROC1
CS4	**Use as an intermediate** [Dodecyl acrylate]	PROC2
CS5	**Use as an intermediate** [Dodecyl acrylate]	PROC3
CS6	**Use as an intermediate** [Dodecyl acrylate]	PROC8a
CS7	**Use as an intermediate** [Dodecyl acrylate]	PROC8b
CS8	**Use as an intermediate** [Dodecyl acrylate]	PROC9

5.2. Conditions of use affecting exposure

5.2.1. 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

5.2.2. 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

5.2.3. Control of worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle substance within a closed system.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	240 cm² (palm of one hand)
Indoor or outdoor use	:	Indoor

5.2.4. Control of worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2) [Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle substance within a predominantly closed system.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

5.2.5. Control of worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3) [Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle substance within a predominantly closed system.		
Conditions and measures related to personal protection, hygiene and health evaluation		

Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	240 cm² (palm of one hand)
Indoor or outdoor use	:	Indoor

5.2.6. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Ensure good ventilation. Inhalation - minimum efficiency of 30 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	960 cm² (both hands)
Indoor or outdoor use	:	Indoor

5.2.7. Control of worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours

Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle in semi-closed process with occasional controlled exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	960 cm² (both hands)
Indoor or outdoor use	:	Indoor

5.2.8. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	> 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Handle in semi-closed process with occasional controlled exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

5.3. Exposure estimation and reference to its source

5.3.1. 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).

5.3.2. 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).

5.3.3. Worker exposure: Chemical production or refinery in closed process without likelihood of exposure or processes with equivalent containment conditions (PROC1)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	0,100159 mg/m³ (EasyTRA)	0,001023	
dermal, systemic, long-term	0,006857 mg/kg bw/day (EasyTRA)	0,000049	

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

5.3.4. Worker exposure: Chemical production or refinery in closed continuous process with occasional controlled exposure or processes with equivalent containment conditions (PROC2)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	10,016 mg/m³ (EasyTRA)	0,102307	
dermal, systemic, long-term	0,274286 mg/kg bw/day (EasyTRA)	0,001975	

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

5.3.5. Worker exposure: Manufacture or formulation in the chemical industry in closed batch processes with occasional controlled exposure or processes with equivalent containment condition (PROC3)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	30,048 mg/m³ (EasyTRA)	0,306922	
dermal, systemic, long-term	0,137143 mg/kg bw/day (EasyTRA)	0,000987	

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

5.3.6. Worker exposure: Transfer of substance or mixture (charging/discharging) at non dedicated-facilities (PROC8a)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks

inhalative, systemic, long-term	70,111 mg/m³ (EasyTRA)	0,716152	
dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

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

5.3.7. Worker exposure: Transfer of substance or mixture (charging/discharging) at dedicated facilities (PROC8b)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

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

5.3.8. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	50,08 mg/m³ (EasyTRA)	0,511537	
dermal, systemic, long-term	1,371 mg/kg bw/day (EasyTRA)	0,009873	

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

5.4. 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.

ES6: Widespread use by professional workers

6.1. Title section

Exposure Scenario name	:	Use of preparations containing the substance: professional
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
Worker		
CS2	**Use of preparations containing the substance: professional** [Dodecyl acrylate]	PROC5
CS3	**Use of preparations containing the substance: professional** [Dodecyl acrylate]	PROC9
CS4	**Use of preparations containing the substance: professional** [Dodecyl acrylate]	PROC10
CS5	**Use of preparations containing the substance: professional** [Dodecyl acrylate]	PROC11

6.2. Conditions of use affecting exposure

6.2.1. 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

6.2.2. Control of worker exposure: Mixing or blending in batch processes (PROC5)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	1 - 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
No specific measures identified.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palms of both hands)
Indoor or outdoor use	:	Indoor

6.2.3. Control of worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	1 - 4 hours
Frequency of use	:	5 days/week

Technical and organisational conditions and measures		
Handle in semi-closed process with occasional controlled exposure.		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	480 cm² (palm of one hand)
Indoor or outdoor use	:	Indoor

6.2.4. Control of worker exposure: Roller application or brushing (PROC10)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	5 - 25%
Molar Mass	:	240,38 g/mol
Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	1 - 4 hours
Frequency of use	:	5 days/week
Technical and organisational conditions and measures		
Ensure good ventilation. Inhalation - minimum efficiency of 30 %		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 %		
Other conditions affecting workers exposure		
Exposed skin area	:	960 cm² (both hands)
Indoor or outdoor use	:	Indoor

6.2.5. Control of worker exposure: Non-industrial spraying (PROC11)
[Dodecyl acrylate]

Product (article) characteristics		
Concentration of the Substance in Mixture/Article	:	5 - 25%
Concentration of the Substance in Mixture/Article	:	100%
Molar Mass	:	240,38 g/mol

Vapour pressure	:	0,274 Pa at 25 °C
Physical form of product	:	Liquid
Amount used, frequency and duration of use (or from service life)		
Duration of the activity	:	15 - 60 minutes
Frequency of use	:	5 days/week
Remarks	:	Substance concentration, 5 - 25%
Duration of the activity	:	1 - 4 hours/day
Frequency of use	:	5 days/week
Remarks	:	Substance concentration, 100%
Technical and organisational conditions and measures		
Provide enhanced general ventilation. Inhalation - minimum efficiency of 70 % Remarks Substance concentration 5 - 25%		
Conditions and measures related to personal protection, hygiene and health evaluation		
Wear suitable gloves tested to EN374. Dermal - minimum efficiency of 80 % Remarks All concentrations		
Wear suitable respiratory protection. Inhalation - minimum efficiency of 90 % Remarks Substance concentration 100%		
Irrespective of the stated risk management measures respiratory protection is generally recommended for spraying applications. Remarks Substance concentration 5 - 25%		
Other conditions affecting workers exposure		
Exposed skin area	:	1500 cm² (both hands and forearms)
Indoor or outdoor use	:	Indoor

6.3. Exposure estimation and reference to its source

6.3.1. 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).

6.3.2. Worker exposure: Mixing or blending in batch processes (PROC5)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	60,095 mg/m³ (EasyTRA)	0,613845	
dermal, systemic, long-term	2,743 mg/kg bw/day (EasyTRA)	0,019747	

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

6.3.3. Worker exposure: Transfer of substance or mixture into small containers (dedicated filling line, including weighing) (PROC9)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	60,095 mg/m³ (EasyTRA)	0,613845	
dermal, systemic, long-term	1,371 mg/kg bw/day (EasyTRA)	0,009873	

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

6.3.4. Worker exposure: Roller application or brushing (PROC10)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	63,1 mg/m³ (EasyTRA)	0,644537	
dermal, systemic, long-term	3,291 mg/kg bw/day (EasyTRA)	0,023696	

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

6.3.5. Worker exposure: Non-industrial spraying (PROC11)
[Dodecyl acrylate]

Exposure route	Exposure level	RCR	Remarks
inhalative, systemic, long-term	36,057 mg/m³ (EasyTRA)	0,368307	Substance concentration, 5 - 25%
dermal, systemic, long-term	12,857 mg/kg bw/day (EasyTRA)	0,092564	Substance concentration, 5 - 25%
inhalative, systemic, long-term	60,095 mg/m³ (EasyTRA)	0,613845	Substance concentration, 100%
dermal, systemic, long-term	21,429 mg/kg bw/day (EasyTRA)	0,154273	Substance concentration, 100%

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

6.4. 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.