

SAFETY DATA SHEET

According to REACH Regulation (EC) No 1907/2006, as amended by UK REACH Regulations SI 2019/758

HUNTSMAN

Enriching lives through innovation

ARALDITE® 2080 RESIN

Version	Revision Date:	SDS Number:	Date of last issue: 17.09.2019
2.0	13.07.2021	400000009258	Date of first issue: 17.09.2019

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

1.1 Product identifier

Trade name : ARALDITE® 2080 RESIN

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

Use of the Substance/Mixture : Resin

1.3 Details of the supplier of the safety data sheet

Company : Huntsman Advanced Materials (Europe)BVBA
Address : Everslaan 45
3078 Everberg
Belgium
Telephone : +41 61 299 20 41
Telefax : +41 61 299 20 40
E-mail address of person responsible for the SDS : Global_Product_EHS_AdMat@huntsman.com

1.4 Emergency telephone number

Emergency telephone number : EUROPE: +32 35 75 1234
France ORFILA: +33(0)145425959
ASIA: +65 6336-6011
China: +86 20 39377888
+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1/800/424.9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin irritation, Category 2	H315: Causes skin irritation.
Serious eye damage, Category 1	H318: Causes serious eye damage.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Specific target organ toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.
Long-term (chronic) aquatic hazard, Category 3	H412: Harmful to aquatic life with long lasting effects.

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2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P261 Avoid breathing mist or vapours.
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.

Response:
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

Hazardous components which must be listed on the label:

2-hydroxyethyl methacrylate

methacrylic acid, monoester with propane-1,2-diol

methacrylic acid

maleic acid

tert-butyl perbenzoate

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate

2.3 Other hazards

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

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Ecological information: 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.

Toxicological information: 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 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
2-hydroxyethyl methacrylate	868-77-9 212-782-2 607-124-00-X	Skin Irrit. 2; H315 Eye Irrit. 2; H319 Skin Sens. 1; H317	>= 30 - < 50
methacrylic acid, monoester with propane-1,2-diol	27813-02-1 248-666-3	Eye Irrit. 2; H319 Skin Sens. 1; H317	>= 10 - < 20
methacrylic acid	79-41-4 201-204-4 607-088-00-5	Acute Tox. 4; H302 Acute Tox. 4; H332 Acute Tox. 3; H311 Skin Corr. 1A; H314 Eye Dam. 1; H318 STOT SE 3; H335 (Respiratory system) specific concentration limit STOT SE 3; H335 >= 1 % Skin Corr. 1A; H314 >= 10 % Skin Irrit. 2; H315 1 - < 10 % Eye Dam. 1; H318 >= 3 % Eye Irrit. 2A; H319 1 - < 3 %	>= 5 - < 10
maleic acid	110-16-7 203-742-5 607-095-00-3	Acute Tox. 4; H302 Acute Tox. 4; H312 Skin Irrit. 2; H315 Eye Dam. 1; H318 Skin Sens. 1; H317 STOT SE 3; H335 (Respiratory system) STOT RE 2; H373 (Kidney) specific concentration	>= 1 - < 3

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		limit Skin Sens. 1; H317 >= 0.1 %	
tert-butyl perbenzoate	614-45-9 210-382-2	Org. Perox. C; H242 Acute Tox. 4; H332 Skin Irrit. 2; H315 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 3; H412 M-Factor (Acute aquatic toxicity): 1	>= 1 - < 2.5
2,6-Di-tert-butyl-p-cresol	128-37-0 204-881-4	Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Chronic aquatic toxicity): 1	>= 1 - < 2.5
2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate	52628-03-2 258-053-2 UK-01-0362106337-3-0001	Skin Corr. 1A; H314 Eye Dam. 1; H318 Skin Sens. 1B; H317	>= 0.1 - < 1
3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane	26741-53-7 247-952-5	Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 1 M-Factor (Chronic aquatic toxicity): 1	>= 0.1 - < 0.25

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.

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In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Continue rinsing eyes during transport to hospital.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Induce vomiting immediately and call a physician.
Keep respiratory tract clear.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

None known.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO₂)

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Carbon oxides

5.3 Advice for firefighters

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.
For safety reasons in case of fire, cans should be stored separately in closed containments.
Use a water spray to cool fully closed containers.

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SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : 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).
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal considerations see section 13., See Section 1 for emergency contact information., For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling : Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
To avoid spills during handling keep bottle on a metal tray.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material.
Keep away from open flames, hot surfaces and sources of ignition.

Hygiene measures : When using do not eat or drink. When using do not smoke.
Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be

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carefully resealed and kept upright to prevent leakage. Observe label precautions. Keep in properly labelled containers.

Advice on common storage : For incompatible materials please refer to Section 10 of this SDS.

Recommended storage temperature : 2 - 8 °C

Further information on storage stability : Stable under normal conditions.

7.3 Specific end use(s)

Specific use(s) : No data available

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
methacrylic acid	79-41-4	TWA	20 ppm 72 mg/m ³	GB EH40
		STEL	40 ppm 143 mg/m ³	GB EH40
Silica, amorphous, fumed, cryst.-free	112945-52-5	TWA (inhalable dust)	6 mg/m ³ (Silica)	GB EH40
		TWA (Respirable dust)	2.4 mg/m ³ (Silica)	GB EH40
2,6-Di-tert-butyl-p-cresol	128-37-0	TWA	10 mg/m ³	GB EH40

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
2,6-Di-tert-butyl-p-cresol	Workers	Inhalation	Long-term systemic effects	3.5 mg/m ³
	Workers	Dermal	Long-term systemic effects	0.5 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	0.86 mg/m ³
	Consumers	Dermal	Long-term systemic effects	0.25 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects	0.25 mg/kg bw/day
2-hydroxyethyl	Workers	Inhalation	Long-term systemic	4.9 mg/m ³

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methacrylate			effects	
	Workers	Dermal	Long-term systemic effects	1.3 mg/kg
	Consumer use	Inhalation	Long-term systemic effects	2.9 mg/m3
	Consumer use	Dermal	Long-term systemic effects	0.83 mg/kg
	Consumer use	Oral	Long-term systemic effects	0.83 mg/kg
methacrylic acid	Workers	Inhalation	Long-term systemic effects	29.6 mg/m3
	Workers	Inhalation	Long-term local effects	88 mg/m3
	Workers	Dermal	Long-term systemic effects	4.25 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	6.3 mg/m3
	Consumers	Inhalation	Long-term local effects	6.55 mg/m3
	Consumers	Dermal	Long-term systemic effects	2.55 mg/kg bw/day
Silica, amorphous, fumed, cryst.-free	Workers	Inhalation	Long-term systemic effects	4 mg/m3
methacrylic acid, monoester with propane-1,2-diol	Workers	Inhalation	Long-term systemic effects	14.7 mg/m3
	Workers	Dermal	Long-term systemic effects	4.2 mg/kg
	Consumers	Inhalation	Long-term systemic effects	8.8 mg/m3
	Consumers	Oral	Long-term systemic effects	2.5 mg/kg
	Consumers	Dermal	Long-term systemic effects	2.5 mg/kg
2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate	Workers	Inhalation	Long-term systemic effects	7.04 mg/m3
	Workers	Dermal	Long-term systemic effects	1 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	1.74 mg/m3
	Consumers	Dermal	Long-term systemic effects	0.5 mg/kg bw/day
3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane	Workers	Inhalation	Long-term systemic effects	2.75 mg/m3
	Workers	Dermal	Long-term systemic	0.780 mg/kg

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			effects	
	Consumers	Inhalation	Long-term systemic effects	0.680 mg/m ³
	Consumers	Dermal	Long-term systemic effects	0.390 mg/kg bw/day
	Consumers	Oral	Long-term systemic effects	0.390 mg/kg bw/day

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
2,6-Di-tert-butyl-p-cresol	Fresh water	0.199 µg/l
Remarks:	Assessment Factors	
	Marine water	0.02 µg/l
	Assessment Factors	
	Sewage treatment plant	0.17 mg/l
	Assessment Factors	
	Fresh water sediment	0.0996 mg/kg dry weight (d.w.)
	Equilibrium method	
	Marine sediment	0.00996 mg/kg dry weight (d.w.)
	Equilibrium method	
	Soil	0.04769 mg/kg dry weight (d.w.)
	Equilibrium method	
	Oral	8.33 mg/kg
2-hydroxyethyl methacrylate	Fresh water	0.482 mg/l
	Marine water	0.482 mg/l
	Freshwater - intermittent	1 mg/l
	Sewage treatment plant	10 mg/l
	Fresh water sediment	3.79 mg/kg
	Marine sediment	3.79 mg/kg
	Soil	0.476 mg/kg
methacrylic acid	Fresh water	0.82 mg/l
	Assessment Factors	
	Marine water	0.82 mg/l
	Assessment Factors	
	Freshwater - intermittent	0.82 mg/l
	Assessment Factors	

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	Sewage treatment plant	10 mg/l
Assessment Factors		
	Soil	1.2 mg/kg
Equilibrium method		
methacrylic acid, monoester with propane-1,2-diol	Fresh water	0.904 mg/l
Assessment Factors		
	Marine water	0.0904 mg/l
Assessment Factors		
	Freshwater - intermittent	0.972 mg/l
Assessment Factors		
	Sewage treatment plant	10 mg/l
Assessment Factors		
	Fresh water sediment	6.28 mg/kg
Equilibrium method		
	Marine sediment	6.28 mg/kg
Equilibrium method		
	Soil	0.727 mg/kg
Equilibrium method		
2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate	Fresh water	0.068 mg/l
Assessment Factors		
	Marine water	0.007 mg/l
Assessment Factors		
	Sewage treatment plant	0.546 mg/l
Assessment Factors		
	Fresh water sediment	0.481 mg/kg dry weight (d.w.)
Equilibrium method		
	Marine sediment	0.048 mg/kg dry weight (d.w.)
Equilibrium method		
	Soil	0.056 mg/kg dry weight (d.w.)
Equilibrium method		
3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphoshaspiro[5.5]undecane	Fresh water	0.002 mg/l

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	Assessment Factors	
	Marine water	0.0002 mg/l
	Assessment Factors	
	Freshwater - intermittent	0.707 mg/l
	Assessment Factors	
	Sewage treatment plant	42 mg/l
	Assessment Factors	
	Fresh water sediment	20000000 mg/kg
	Equilibrium method	
	Marine sediment	2000000 mg/kg
	Equilibrium method	
	Soil	1 mg/kg
	Assessment Factors	

8.2 Exposure controls

Personal protective equipment

- Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.
- Hand protection
- Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.
- Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.
- Respiratory protection : In the case of vapour formation use a respirator with an approved filter.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

- Physical state : paste
- Colour : off-white
- Odour : slight
- Odour Threshold : No data is available on the product itself.
- pH : No data is available on the product itself.
- Melting point/freezing point : No data is available on the product itself.

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Boiling point	:	No data is available on the product itself.
Flash point	:	> 60 °C Method: estimated
Evaporation rate	:	No data is available on the product itself.
Flammability (solid, gas)	:	No data is available on the product itself.
Burning rate	:	No data is available on the product itself.
Upper explosion limit / Upper flammability limit	:	No data is available on the product itself.
Lower explosion limit / Lower flammability limit	:	No data is available on the product itself.
Vapour pressure	:	No data is available on the product itself.
Relative vapour density	:	No data is available on the product itself.
Relative density	:	No data is available on the product itself.
Density	:	1.0 - 1.1 g/cm ³ (25 °C) Method: estimated
Solubility(ies)		
Water solubility	:	insoluble, immiscible
Solubility in other solvents	:	No data is available on the product itself.
Partition coefficient: n-octanol/water	:	No data is available on the product itself.
Auto-ignition temperature	:	No data is available on the product itself.
Decomposition temperature	:	No data is available on the product itself.
Viscosity		
Viscosity, dynamic	:	30,000 - 50,000 mPa.s (25 °C)
Explosive properties	:	No data is available on the product itself.
Oxidizing properties	:	No data is available on the product itself.

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

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10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid : Strong acids and strong bases
Strong oxidizing agents

10.6 Hazardous decomposition products

Hazardous decomposition products : carbon dioxide
carbon monoxide

SECTION 11: Toxicological information

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

Acute toxicity

Acute oral toxicity - Product : Acute toxicity estimate : > 2,000 mg/kg
Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate : > 20 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : > 2,000 mg/kg
Method: Calculation method

Acute toxicity (other routes of administration) : No data available

Skin corrosion/irritation

Product:

Method: Expert judgement

Result: Severe skin irritation

Remarks: Information given is based on data on the components and the toxicology of similar products.

Serious eye damage/eye irritation

Components:

2-hydroxyethyl methacrylate:

Species: Rabbit

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Result: Irritation to eyes, reversing within 7 days

methacrylic acid, monoester with propane-1,2-diol:

Species: Rabbit

Result: Eye irritation

methacrylic acid:

Species: Rabbit

Assessment: Risk of serious damage to eyes.

Method: Draize Test

Result: Irreversible effects on the eye

GLP: no

maleic acid:

Species: Rabbit

Assessment: Corrosive

Method: OECD Test Guideline 405

Result: Corrosive

tert-butyl perbenzoate:

Species: Rabbit

Method: OECD Test Guideline 405

Result: No eye irritation

2,6-Di-tert-butyl-p-cresol:

Species: Rabbit

Assessment: No eye irritation

Method: OECD Test Guideline 405

Result: No eye irritation

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:

Result: Corrosive

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:

Species: Rabbit

Assessment: No eye irritation

Method: OECD Test Guideline 405

Result: No eye irritation

Respiratory or skin sensitisation

Components:

2-hydroxyethyl methacrylate:

Test Type: Buehler Test

Species: Guinea pig

Result: Did not cause sensitisation on laboratory animals.

Species: Humans

Result: Probability or evidence of skin sensitisation in humans

methacrylic acid, monoester with propane-1,2-diol:

Exposure routes: Skin

Species: Humans

Result: May cause sensitisation by skin contact.

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methacrylic acid:

Test Type: Buehler Test

Exposure routes: Skin

Species: Guinea pig

Assessment: Did not cause sensitisation on laboratory animals.

Method: OECD Test Guideline 406

Result: Did not cause sensitisation on laboratory animals.

maleic acid:

Exposure routes: Skin

Species: Guinea pig

Assessment: May cause sensitisation by skin contact.

Method: OECD Test Guideline 406

Result: Causes sensitisation.

tert-butyl perbenzoate:

Test Type: LLNA (Local Lymph Node Assay)

Exposure routes: Skin

Species: Mouse

Method: OECD Test Guideline 429

Result: May cause sensitisation by skin contact.

2,6-Di-tert-butyl-p-cresol:

Exposure routes: Skin

Species: Humans

Result: Does not cause skin sensitisation.

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:

Test Type: LLNA (Local Lymph Node Assay)

Species: Mouse

Method: OECD Test Guideline 429

Result: The product is a skin sensitiser, sub-category 1B.

GLP: yes

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:

Exposure routes: Skin

Species: Guinea pig

Method: OECD Test Guideline 406

Result: Does not cause skin sensitisation.

Assessment: No data available

Germ cell mutagenicity

Components:

2-hydroxyethyl methacrylate:

Genotoxicity in vitro

: Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Result: negative

: Test Type: In vitro mammalian cell gene mutation test

Test system: Chinese hamster ovary cells

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Metabolic activation: with and without metabolic activation
Result: negative

: Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster lung cells
Metabolic activation: with and without metabolic activation

methacrylic acid, monoester with propane-1,2-diol:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

: Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

: Metabolic activation: with and without metabolic activation
Result: positive

methacrylic acid:

Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

maleic acid:

Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative

: Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative

tert-butyl perbenzoate:

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

2,6-Di-tert-butyl-p-cresol:

Genotoxicity in vitro : Test Type: reverse mutation assay
Metabolic activation: with and without metabolic activation

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Result: negative

: Test Type: Chromosome aberration test in vitro
Metabolic activation: with and without metabolic activation
Result: negative

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella tryphimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

: Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

: Test Type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:

Genotoxicity in vitro : Method: OECD Test Guideline 471
Result: negative

: Method: OECD Test Guideline 476
Result: negative

: Method: OECD Test Guideline 473
Result: negative

Components:

2-hydroxyethyl methacrylate:

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Test species: Rat
Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

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Test Type: Chromosome aberration test in vitro
Test species: Drosophila melanogaster (vinegar fly)
Result: negative

methacrylic acid, monoester with propane-1,2-diol:
Genotoxicity in vivo : Result: negative

Exposure time: 2 d
Dose: 500 - 2000 mg/kg
Method: OECD Test Guideline 474
Result: negative

Dose: 2000 mg/kg
Method: OECD Test Guideline 474
Result: negative

methacrylic acid:
Genotoxicity in vivo : Test Type: in vivo assay
Test species: Rat (male)
Cell type: Somatic
Application Route: Inhalation
Exposure time: 2 h
Dose: 0.4, 1.6, 2.8 and 4 mg/L
Method: OECD Test Guideline 475
Result: Not classified due to inconclusive data.
GLP: no

Test Type: dominant lethal test
Test species: Mouse (male)
Application Route: Inhalation
Exposure time: 6 h
Dose: 0.405, 4.05 and 36.45 mg/L
Method: OECD Test Guideline 478
Result: negative
GLP: no

tert-butyl perbenzoate:
Genotoxicity in vivo : Test Type: Micronucleus test
Test species: Mouse
Dose: 0, 30, 60, 125, 250, 500 mg/kg
Result: negative

2,6-Di-tert-butyl-p-cresol:
Genotoxicity in vivo : Application Route: Intraperitoneal injection
Dose: 75 mg/kg
Result: negative

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Application Route: Oral
Exposure time: 9 Months
Dose: ca 750 mg/kg
Result: negative

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:
Genotoxicity in vivo : Application Route: Intraperitoneal injection
Exposure time: 48 h
Dose: 2000 mg/kg
Method: OECD Test Guideline 474
Result: negative

Germ cell mutagenicity- : No data available
Assessment

Carcinogenicity

Components:

2-hydroxyethyl methacrylate:

Species: Mouse

Application Route: inhalation (vapour)

Exposure time: 102 weeks

Frequency of Treatment: 5 days/week

Method: OECD Test Guideline 451

Result: negative

Remarks: Information given is based on data obtained from similar substances.

Species: Rat

Application Route: Oral

Exposure time: 104 weeks

Result: negative

Remarks: Information given is based on data obtained from similar substances.

methacrylic acid, monoester with propane-1,2-diol:

Species: Rat, male and female

Application Route: Inhalation

Exposure time: 24 month(s)

Dose: 250 - 1000 ppm

Method: OECD Test Guideline 451

Result: negative

Species: Rat, male and female

Application Route: Oral

Exposure time: 104 weeks

Dose: 6 - 2000 ppm

Frequency of Treatment: 7 daily

Result: negative

methacrylic acid:

Species: Rat, male and female

Application Route: inhalation (vapour)

Exposure time: 102 weeks

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Frequency of Treatment: 5 days/week
No observed adverse effect level: \geq 2.05 mg/kg body weight
Method: OECD Test Guideline 451

Species: Mouse, male and female
Application Route: inhalation (vapour)
Exposure time: 102 weeks
Dose: ca. 2.05 and 4.1 mg/L
Frequency of Treatment: 5 days/week
Lowest observed adverse effect level: ca. 2.05 mg/l
Method: OECD Test Guideline 451

maleic acid:
Species: Rat, male and female
Application Route: Oral
Exposure time: 2 years
No observed adverse effect level: \geq 100 mg/kg bw/day
Method: OECD Test Guideline 451

2,6-Di-tert-butyl-p-cresol:
Species: Rat, male and female
Application Route: Oral
Result: negative

Carcinogenicity - Assessment : No data available

Reproductive toxicity

Components:

2-hydroxyethyl methacrylate:
Effects on fertility : Species: Rat
Application Route: Oral
General Toxicity - Parent: No observed adverse effect level: 50 mg/kg body weight
General Toxicity F1: No observed adverse effect level: 50 mg/kg body weight
Fertility: No observed adverse effect level: 400 mg/kg body weight
Early Embryonic Development: No observed adverse effect level: 400 mg/kg body weight
Method: OECD Test Guideline 416
Result: No effects on fertility and early embryonic development were detected.
Remarks: Information given is based on data obtained from similar substances.

Species: Rat
Application Route: Oral
General Toxicity - Parent: No observed adverse effect level: 1,000 mg/kg body weight
General Toxicity F1: No observed adverse effect level: 1,000 mg/kg body weight
Method: OECD Test Guideline 422

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methacrylic acid, monoester with propane-1,2-diol:

Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 416

methacrylic acid:

Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Dose: 0, 50, 150, 450 mg/kg/day
General Toxicity - Parent: No observed adverse effect level:
50 mg/kg body weight
Fertility: No observed adverse effect level F1: 400 mg/kg body
weight
Symptoms: Reduced body weight
Method: OECD Test Guideline 416
GLP: yes

maleic acid:

Species: Rat, male and female
Application Route: Oral
Target Organs: Bladder, Kidney
Method: OECD Test Guideline 416
Result: No effects on fertility and early embryonic
development were detected.

tert-butyl perbenzoate:

Species: Rat, male and female
Application Route: Oral
Dose: 0, 100, 300, 750, 1000 mg/kg
General Toxicity - Parent: No observed adverse effect level:
300 mg/kg body weight
General Toxicity F1: No-observed-effect level: 300 mg/kg
body weight
Method: OECD Test Guideline 421

2,6-Di-tert-butyl-p-cresol:

Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Dose: 25/100/500 mg/kg bw/day
General Toxicity - Parent: No observed adverse effect level:
100 mg/kg body weight
General Toxicity F1: No observed adverse effect level: 25
mg/kg body weight
Result: negative

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:

Species: Rat, male and female
Application Route: Oral
Method: OECD Test Guideline 415
Result: negative

Components:

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2-hydroxyethyl methacrylate:

Effects on foetal development

: Species: Rat
Application Route: Inhalation
General Toxicity Maternal: Lowest observed effect level: 0.41 g/m³
Teratogenicity: No observed adverse effect concentration F1: 8.3
Embryo-foetal toxicity: No observed adverse effect concentration F1: 8.3
Method: OECD Test Guideline 414
Remarks: Information given is based on data obtained from similar substances.

Species: Rabbit
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 50 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: 450 mg/kg body weight
Method: OECD Test Guideline 414
Remarks: Information given is based on data obtained from similar substances.

methacrylic acid, monoester with propane-1,2-diol:

Species: Rabbit, female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 50 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

methacrylic acid:

Test Type: Pre-natal
Species: Rat, female
Application Route: Inhalation
Dose: 0, 50, 100, 200 or 300 ppm
Duration of Single Treatment: 14 d
Frequency of Treatment: 7 days/week
General Toxicity Maternal: No observed adverse effect level: 200 ppm
Developmental Toxicity: No observed adverse effect level: >= 300 ppm
Embryo-foetal toxicity: No observed adverse effect concentration F1: 300 ppm
Method: OECD Test Guideline 414
Result: No effects on fertility and early embryonic development were detected.

Test Type: Pre-natal
Species: Rabbit, male and female
Application Route: Oral
Dose: 50, 150, 450 milligram per kilogram
Duration of Single Treatment: 23 d
Frequency of Treatment: 7 days/week
General Toxicity Maternal: No observed adverse effect level:

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50 mg/kg body weight
Developmental Toxicity: No observed adverse effect level F1:
450 mg/kg body weight
Result: No effects on fertility and early embryonic
development were detected.

tert-butyl perbenzoate:

General Toxicity Maternal: No-observed-effect level: 300
mg/kg body weight
Developmental Toxicity: No-observed-effect level: 100 mg/kg
body weight
Method: OECD Test Guideline 414

2,6-Di-tert-butyl-p-cresol:

Test Type: Pre-natal
Species: Mouse, female
Application Route: Oral
Duration of Single Treatment: 7 d
General Toxicity Maternal: No observed adverse effect level:
240 mg/kg body weight
Developmental Toxicity: No observed adverse effect level:
800 mg/kg body weight
Target Organs: spleen, Kidney

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:

Test Type: Pre-natal
Species: Rat, females
Application Route: Oral
Dose: 100/300/1000 mg/kg bw/day
General Toxicity Maternal: No observed adverse effect level:
300 mg/kg body weight
Developmental Toxicity: No-observed-effect level: 1,000
mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:

Species: Rabbit
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
200 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Reproductive toxicity - : No data available
Assessment

STOT - single exposure

Components:

methacrylic acid:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

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maleic acid:

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT - repeated exposure

Components:

maleic acid:

Exposure routes: Ingestion

Target Organs: Kidney

Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Repeated dose toxicity

Components:

2-hydroxyethyl methacrylate:

Species: Rat

NOAEL: 100 mg/kg

Application Route: Oral

Method: OECD Test Guideline 422

Species: Rat

NOAEL: 0.5 mg/l

Application Route: Inhalation

Exposure time: 21 d

methacrylic acid, monoester with propane-1,2-diol:

Species: Rat, male and female

NOAEL: 300 mg/kg

Application Route: Ingestion

Exposure time: 1,176 h Number of exposures: 7 d

Dose: 0, 30, 100, 300, 1000 mg/kg bw

Method: OECD Test Guideline 422

methacrylic acid:

Species: Rat, male and female

NOEC: 352 - 1232

Application Route: inhalation (vapour)

Test atmosphere: vapour

Exposure time: 90 d Number of exposures: 6 h

Dose: 70/352/1232 mg/m³

Subsequent observation period: 5 days/week

Method: OECD Test Guideline 413

GLP: yes

maleic acid:

Species: Rat, male and female

NOEL: 40 mg/kg

Application Route: Ingestion

Exposure time: 2,160 h Number of exposures: 7 d

Method: Subchronic toxicity

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tert-butyl perbenzoate:

Species: Rat, male and female

NOAEL: 30 mg/kg

Application Route: Oral

Exposure time: 90 days Dose: 0, 30, 60, 125, 250, 500 mg/kg

2,6-Di-tert-butyl-p-cresol:

Species: Pig, male and female

NOAEL: >= 61 mg/kg

Application Route: oral (feed)

Exposure time: daily Method: Chronic toxicity

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:

Species: Rat, male and female

NOEL: 100 mg/kg

Application Route: oral (gavage)

Exposure time: 28 d Number of exposures: 7 days/week

Dose: 0, 100, 300, or 1000 MKD

Method: OECD Test Guideline 407

GLP: yes

Target Organs: Kidney, Stomach

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:

Species: Rat, male and female

NOAEL: 55 - 71

Application Route: Ingestion

Exposure time: 2,160 h Number of exposures: 7 d

Method: Subchronic toxicity

Repeated dose toxicity - Assessment : No data available

Aspiration toxicity

No data available

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : 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.

Experience with human exposure

General Information: No data available

Inhalation: No data available

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Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Ingestion: No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

2-hydroxyethyl methacrylate:

Toxicity to fish : LC50 (Oryzias latipes (Japanese medaka)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other : (Daphnia magna (Water flea)): 380 mg/l
aquatic invertebrates : Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic : ErC50 (Selenastrum capricornutum (green algae)): 836 mg/l
plants : Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Selenastrum capricornutum (green algae)): 400 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to daphnia and other : NOEC: 24.1 mg/l
aquatic invertebrates : Exposure time: 21 d
(Chronic toxicity) : Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

methacrylic acid, monoester with propane-1,2-diol:

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 493 mg/l
Exposure time: 48 h

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Test Type: static test
Test substance: Fresh water
Method: DIN 38412

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 143 mg/l
Exposure time: 48 h
Test Type: semi-static test
Test substance: Fresh water

Toxicity to algae/aquatic plants : EC50 (Selenastrum capricornutum (green algae)): > 97.2 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 45.2 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

Ecotoxicology Assessment
Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : This product has no known ecotoxicological effects.

methacrylic acid:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 85 mg/l
End point: mortality
Exposure time: 96 h
Test Type: flow-through test
Test substance: Fresh water
Method: EPA OTS 797.1400
GLP: yes
Remarks: Toxic to aquatic organisms.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 130 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: flow-through test
Analytical monitoring: yes
Test substance: Fresh water
Method: EPA OTS 797.1300
GLP: yes

Toxicity to algae/aquatic plants : ErC50 (Selenastrum capricornutum (green algae)): 45 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

NOEC (Selenastrum capricornutum (green algae)): 8.2 mg/l

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Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 201
GLP: yes

Toxicity to microorganisms : EC50 (*Pseudomonas putida*): 270 mg/l
Exposure time: 16.5 h
Test Type: static test
Analytical monitoring: no
Test substance: Fresh water
Method: DIN 38 412 Part 8
GLP: yes

Toxicity to fish (Chronic toxicity) : NOEC: 10 mg/l
Exposure time: 35 d
Species: *Brachydanio rerio* (zebrafish)
Test Type: flow-through test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 210
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 53 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Test Type: flow-through test
Analytical monitoring: yes
Test substance: Fresh water
Method: OECD Test Guideline 211
GLP: yes

maleic acid:

Toxicity to fish : LC50 (*Oncorhynchus mykiss* (rainbow trout)): 75 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OPPTS 850.1075

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 42.81 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : ErC50 (*Selenastrum capricornutum* (green algae)): 74.35 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

tert-butyl perbenzoate:

Toxicity to fish : LC50 (*Danio rerio* (zebra fish)): 1.6 mg/l
Exposure time: 96 h

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Test Type: semi-static test
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 11 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 0.8 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes

M-Factor (Acute aquatic toxicity) : 1

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.49 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Method: OECD Test Guideline 211

2,6-Di-tert-butyl-p-cresol:
Toxicity to fish : LC50 (Fish): 0.199 mg/l
Exposure time: 96 h
Test substance: Fresh water
Method: QSAR

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.48 mg/l
End point: Immobilization
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): > 0.24 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.24 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

Toxicity to microorganisms : ErC50 (activated sludge): 1.7 mg/l
Exposure time: 24 h
Test Type: static test

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Toxicity to fish (Chronic toxicity) : NOEC: 0.053 mg/l
Exposure time: 30 d
Species: *Oryzias latipes* (Orange-red killifish)
Test substance: Fresh water
Method: OECD Test Guideline 210

NOEC: \geq 23.8 mg/l
Exposure time: 70 d
Species: Fish
Test substance: Fresh water

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC50: 0.096 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Test substance: Fresh water
Method: OECD Test Guideline 211

NOEC: 0.069 mg/l
Exposure time: 21 d
Species: *Daphnia magna* (Water flea)
Test substance: Fresh water
Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : 1
2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:

Toxicity to fish : LC50 (*Oncorhynchus mykiss* (rainbow trout)): > 112 mg/l
Exposure time: 96 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 203
GLP: yes

Toxicity to daphnia and other aquatic invertebrates : LC50 (*Daphnia magna* (Water flea)): 68 mg/l
Exposure time: 48 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae/aquatic plants : EC50 (*Pseudokirchneriella subcapitata* (algae)): > 120 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes

NOEC (*Pseudokirchneriella subcapitata* (algae)): > 30 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:

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Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): 70.7 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 97 mg/l
Exposure time: 72 h
Test substance: Marine water
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : 1

Toxicity to microorganisms : EC50 : > 1,000 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

Toxicity to fish (Chronic toxicity) : NOEC: 50 mg/l
Exposure time: 96 hrs
Species: Brachydanio rerio (zebrafish)
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.1 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : 1

12.2 Persistence and degradability

Components:

2-hydroxyethyl methacrylate:

Biodegradability : Result: Readily biodegradable.
Biodegradation: 92 - 100 %
Exposure time: 14 d
Method: OECD Test Guideline 301C

methacrylic acid, monoester with propane-1,2-diol:

Biodegradability : Inoculum: activated sludge
Concentration: 100 mg/l
Result: Readily biodegradable.
Biodegradation: 81 %
Exposure time: 28 d
Method: OECD Test Guideline 301C

Stability in water : Degradation half life (DT50): 73.3 d (40 °C)

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pH: 7
Method: OECD Test Guideline 111
GLP: No information available.

Degradation half life (DT50): 38.2 d (40 °C)
pH: 9
Method: OECD Test Guideline 111
GLP: No information available.

methacrylic acid:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Concentration: 3 mg/l
Result: Readily biodegradable.
Biodegradation: 86 %
Exposure time: 28 d
Method: OECD Test Guideline 301D
GLP: yes

maleic acid:

Biodegradability : Inoculum: Sewage (STP effluent)
Concentration: 13.78 mg/l
Result: Readily biodegradable.
Biodegradation: ca. 97 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

tert-butyl perbenzoate:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Concentration: 100 mg/l
Result: Readily biodegradable.
Biodegradation: 70 %
Exposure time: 28 d
Method: OECD Test Guideline 301D

2,6-Di-tert-butyl-p-cresol:

Biodegradability : Result: Not biodegradable

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge, non-adapted
Concentration: 54.6 mg/l
Result: Readily biodegradable.
Biodegradation: 91.8 %
Related to: Dissolved organic carbon (DOC)
Exposure time: 28 d
Method: OECD Test Guideline 301F
GLP: yes

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:

Biodegradability : Inoculum: activated sludge
Concentration: 31 mg/l
Result: Not readily biodegradable.

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Biodegradation: < 10 %
Exposure time: 28 d

12.3 Bioaccumulative potential

Components:

2-hydroxyethyl methacrylate:

Partition coefficient: n-octanol/water : log Pow: 0.42 (25 °C)
pH: 5.9 - 6.1

methacrylic acid:

Partition coefficient: n-octanol/water : log Pow: 0.93 (22 °C)
pH: 2.2

maleic acid:

Partition coefficient: n-octanol/water : log Pow: -1.3 (20 °C)
pH: 2.5
Method: OECD Test Guideline 107

2,6-Di-tert-butyl-p-cresol:

Bioaccumulation : Species: Cyprinus carpio (Carp)
Exposure time: 28 d
Bioconcentration factor (BCF): 330 - 1,800
Method: flow-through test

Partition coefficient: n-octanol/water : log Pow: 5.2

3,9-Bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:

Bioaccumulation : Bioconcentration factor (BCF): 164

Partition coefficient: n-octanol/water : log Pow: 10.9 (25 °C)

12.4 Mobility in soil

Components:

2,6-Di-tert-butyl-p-cresol:

Distribution among environmental compartments : Koc: 8183

12.5 Results of PBT and vPvB assessment

Product:

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

Product:

Assessment : 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.

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12.7 Other adverse effects

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.
Harmful to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of contents/ container to an approved waste disposal plant.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

14.1 UN number or ID number

Not regulated as dangerous goods

14.2 UN proper shipping name

Not regulated as dangerous goods

14.3 Transport hazard class(es)

Not regulated as dangerous goods

14.4 Packing group

Not regulated as dangerous goods

14.5 Environmental hazards

Not regulated as dangerous goods

14.6 Special precautions for user

Not applicable

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

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SECTION 15: Regulatory information

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

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.
Not applicable

Other regulations:

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

The components of this product are reported in the following inventories:

DSL : This product contains one or several components that are not on the Canadian DSL nor NDSL.

AIIC : On the inventory, or in compliance with the inventory

NZIoC : Not in compliance with the inventory

ENCS : Not in compliance with the inventory

KECI : On the inventory, or in compliance with the inventory

PICCS : Not in compliance with the inventory

IECSC : On the inventory, or in compliance with the inventory

TCSI : On the inventory, or in compliance with the inventory

TSCA : All substances listed as active on the TSCA inventory

Inventories

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AICS (Australia), AIIC (Australia), DSL (Canada), IECSC (China), ENCS (Japan), KECI (Korea), NZIOC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States of America (USA))

15.2 Chemical safety assessment

Chemical Safety Assessments for all substances in this product are either Complete or Not applicable.

SECTION 16: Other information

Full text of H-Statements

H242	: Heating may cause a fire.
H302	: Harmful if swallowed.
H311	: Toxic in contact with skin.
H312	: Harmful in contact with skin.
H314	: Causes severe skin burns and eye damage.
H315	: Causes skin irritation.
H317	: May cause an allergic skin reaction.
H318	: Causes serious eye damage.
H319	: Causes serious eye irritation.
H332	: Harmful if inhaled.
H335	: May cause respiratory irritation.
H373	: May cause damage to organs through prolonged or repeated exposure.
H400	: Very toxic to aquatic life.
H410	: Very toxic to aquatic life with long lasting effects.
H412	: Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	: Acute toxicity
Aquatic Acute	: Short-term (acute) aquatic hazard
Aquatic Chronic	: Long-term (chronic) aquatic hazard
Eye Dam.	: Serious eye damage
Eye Irrit.	: Eye irritation
Org. Perox.	: Organic peroxides
Skin Corr.	: Skin corrosion
Skin Irrit.	: Skin irritation
Skin Sens.	: Skin sensitisation
STOT RE	: Specific target organ toxicity - repeated exposure
STOT SE	: Specific target organ toxicity - single exposure
GB EH40	: UK. EH40 WEL - Workplace Exposure Limits
GB EH40 / TWA	: Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL	: Short-term exposure limit (15-minute reference period)

Further information

Classification of the mixture:

Skin Irrit. 2	H315
Eye Dam. 1	H318
Skin Sens. 1	H317
STOT SE 3	H335
Aquatic Chronic 3	H412

Classification procedure:

Based on product data or assessment
Calculation method
Calculation method
Calculation method
Calculation method

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THE PRODUCT MAY PRESENT HAZARDS AND SHOULD BE USED WITH CAUTION. WHILE CERTAIN HAZARDS ARE DESCRIBED IN THIS PUBLICATION, NO GUARANTEE IS MADE THAT THESE ARE THE ONLY HAZARDS THAT EXIST.

Hazards, toxicity and behaviour of the products may differ when used with other materials and are dependent upon the manufacturing circumstances or other processes. Such hazards, toxicity and behaviour should be determined by the user and made known to handlers, processors and end users.

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

1.1 Product identifier

Trade name : ARALDITE® 2080 HARDENER

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

Use of the Substance/Mixture : Hardener

1.3 Details of the supplier of the safety data sheet

Company : Huntsman Advanced Materials (Europe)BVBA
Address : Everslaan 45
3078 Everberg
Belgium
Telephone : +41 61 299 20 41
Telefax : +41 61 299 20 40
E-mail address of person responsible for the SDS : Global_Product_EHS_AdMat@huntsman.com

1.4 Emergency telephone number

Emergency telephone number : EUROPE: +32 35 75 1234
France ORFILA: +33(0)145425959
ASIA: +65 6336-6011
China: +86 20 39377888
+86 532 83889090
India: + 91 22 42 87 5333
Australia: 1800 786 152
New Zealand: 0800 767 437
USA: +1/800/424.9300

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Skin irritation, Category 2	H315: Causes skin irritation.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Specific target organ toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.
Short-term (acute) aquatic hazard, Category 1	H400: Very toxic to aquatic life.
Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

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2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Warning

Hazard statements : H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P261 Avoid breathing mist or vapours.
P264 Wash skin thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.

Response:
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.
P391 Collect spillage.

Hazardous components which must be listed on the label:

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

isodecyl methacrylate

2.3 Other hazards

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

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate	7534-94-3 231-403-1 01-2119886505-27	Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Aquatic Chronic 3;	>= 20 - < 25

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isodecyl methacrylate	29964-84-9 249-978-2 01-2119894925-17	H412 Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Aquatic Acute 1; H400 Aquatic Chronic 1; H410 M-Factor (Acute aquatic toxicity): 10 M-Factor (Chronic aquatic toxicity): 1	>= 20 - < 25
propenoates	72162-39-1 -	Skin Irrit. 2; H315 Eye Irrit. 2; H319	>= 20 - < 30
3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine	34562-31-7 252-091-3 -	Acute Tox. 4; H302 Skin Irrit. 2; H315 Eye Irrit. 2; H319 Aquatic Chronic 4; H413	>= 2.5 - < 10
1,2-dihydro-2,2,4-trimethylquinoline	147-47-7 205-688-8	Acute Tox. 4; H302 Aquatic Chronic 2; H411	>= 1 - < 2.5

For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Induce vomiting immediately and call a physician.
Keep respiratory tract clear.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.
Take victim immediately to hospital.

4.2 Most important symptoms and effects, both acute and delayed

None known.

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4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : Carbon dioxide (CO₂)

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : Carbon oxides

5.3 Advice for firefighters

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

Specific extinguishing methods : No data is available on the product itself.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Refer to protective measures listed in sections 7 and 8.

6.2 Environmental precautions

Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contain spillage, and then collect with non-combustible

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absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).
Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For disposal considerations see section 13., See Section 1 for emergency contact information.,
For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Advice on safe handling : Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.
Dispose of rinse water in accordance with local and national regulations.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Advice on protection against fire and explosion : Do not spray on a naked flame or any incandescent material.
Keep away from open flames, hot surfaces and sources of ignition.
- Hygiene measures : When using do not eat or drink. When using do not smoke.
Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Keep in properly labelled containers.
- Advice on common storage : For incompatible materials please refer to Section 10 of this SDS.
- Recommended storage temperature : 2 - 8 °C
- Further information on storage stability : Stable under normal conditions.

7.3 Specific end use(s)

- Specific use(s) : No data available

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SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Silica, amorphous, fumed, cryst.-free	112945-52-5	TWA (inhalable dust)	6 mg/m ³ (Silica)	GB EH40
Further information	For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/4 General methods for sampling and gravimetric analysis or respirable, thoracic and inhalable aerosols, The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m ⁻³ 8-hour TWA of inhalable dust or 4 mg.m ⁻³ 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed to dust above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limits., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system, and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/4., Where dusts contain components that have their own assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure limit should be used.			
		TWA (Respirable dust)	2.4 mg/m ³ (Silica)	GB EH40
Further information	For the purposes of these limits, respirable dust and inhalable dust are those fractions of airborne dust which will be collected when sampling is undertaken in accordance with the methods described in MDHS14/4 General methods for sampling and gravimetric analysis or respirable, thoracic and inhalable aerosols, The COSHH definition of a substance hazardous to health includes dust of any kind when present at a concentration in air equal to or greater than 10 mg.m ⁻³ 8-hour TWA of inhalable dust or 4 mg.m ⁻³ 8-hour TWA of respirable dust. This means that any dust will be subject to COSHH if people are exposed to dust above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limits., Most industrial dusts contain particles of a wide range of sizes. The behaviour, deposition and fate of any particular particle after entry into the human respiratory system, and the body response that it elicits, depend on the nature and size of the particle. HSE distinguishes two size fractions for limit-setting purposes termed 'inhalable' and 'respirable'. Inhalable dust approximates to the fraction of airborne material that enters the nose and mouth during breathing and is therefore available for deposition in the respiratory tract. Respirable dust approximates to the fraction that penetrates to the gas exchange region of the lung. Fuller definitions and explanatory material are given in MDHS14/4., Where dusts contain components that have their own			

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	assigned WEL, all the relevant limits should be complied with., Where no specific short-term exposure limit is listed, a figure three times the long-term exposure limit should be used.			
Paraffin waxes and Hydrocarbon waxes	8002-74-2	TWA (Fumes)	2 mg/m3	GB EH40
Further information	The word 'fume' is often used to include gases and vapours. This is not the case for exposure limits where 'fume' should normally be applied to solid particles generated by chemical reactions or condensed from the gaseous state, usually after volatilisation from melted substances. The generation of fume is often accompanied by a chemical reaction such as oxidation or thermal breakdown.			
		STEL (Fumes)	6 mg/m3	GB EH40
Further information	The word 'fume' is often used to include gases and vapours. This is not the case for exposure limits where 'fume' should normally be applied to solid particles generated by chemical reactions or condensed from the gaseous state, usually after volatilisation from melted substances. The generation of fume is often accompanied by a chemical reaction such as oxidation or thermal breakdown.			

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate	Workers	Dermal	Systemic effects, Long-term exposure	1.04 mg/kg
	Consumer use	Dermal	Systemic effects, Long-term exposure	0.625 mg/kg
Silica, amorphous, fumed, cryst.-free	Workers	Inhalation	Long-term systemic effects	4 mg/m3

8.2 Exposure controls

Personal protective equipment

Eye protection : Eye wash bottle with pure water
Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Hand protection

Material : butyl-rubber
Break through time : > 8 h

Material : Nitrile rubber
Break through time : 10 - 480 min

Material : Ethyl Vinyl Alcohol Laminate (EVAL)
Break through time : > 8 h

Remarks : The suitability for a specific workplace should be discussed with the producers of the protective gloves.
The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it. Gloves should be discarded and

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replaced if there is any indication of degradation or chemical breakthrough. Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact). The suitability for a specific workplace should be discussed with the producers of the protective gloves.

Skin and body protection : Impervious clothing
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

Respiratory protection : Use respiratory protection unless adequate local exhaust ventilation is provided or exposure assessment demonstrates that exposures are within recommended exposure guidelines.
Recommended Filter type:
Combined particulates and organic vapour type

Filter type : Filter type A-P

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance	: paste
Colour	: brown, orange
Odour	: slight
Odour Threshold	: No data is available on the product itself.
pH	: No data is available on the product itself.
Freezing point	: No data is available on the product itself.
Melting point	: No data is available on the product itself.
Boiling point	: No data is available on the product itself.
Flash point	: > 60 °C Method: estimated
Evaporation rate	: No data is available on the product itself.
Flammability (solid, gas)	: No data is available on the product itself.
Burning rate	: No data is available on the product itself.
Upper explosion limit / Upper flammability limit	: No data is available on the product itself.
Lower explosion limit / Lower flammability limit	: No data is available on the product itself.

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Vapour pressure : No data is available on the product itself.

Relative vapour density : No data is available on the product itself.

Relative density : No data is available on the product itself.

Density : 1.0 - 1.1 g/cm³ (25 °C)
Method: estimated

Solubility(ies)

Water solubility : insoluble, immiscible

Solubility in other solvents : No data is available on the product itself.

Partition coefficient: n-octanol/water : No data is available on the product itself.

Auto-ignition temperature : No data is available on the product itself.

Decomposition temperature : No data is available on the product itself.

Viscosity

Viscosity, dynamic : 30,000 - 50,000 mPa.s (25 °C)

Explosive properties : No data is available on the product itself.

Oxidizing properties : No data is available on the product itself.

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Hazardous reactions : Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid : None known.

10.6 Hazardous decomposition products

No hazardous decomposition products are known.

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SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Acute oral toxicity - Product : Acute toxicity estimate : > 2,000 mg/kg
Method: Calculation method

Components:

isodecyl methacrylate:
Acute inhalation toxicity : LC0 (Rat): > 0.9 mg/l
Exposure time: 1 h
Test atmosphere: vapour
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

Components:

isodecyl methacrylate:
Acute dermal toxicity : LD50 (Rat, male and female): > 3,000 mg/kg

3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine:
Acute dermal toxicity : LD50 (Rabbit, male and female): > 1,000 mg/kg
GLP: yes
Assessment: The substance or mixture has no acute dermal toxicity

Acute toxicity (other routes of administration) : No data available

Skin corrosion/irritation

Components:

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Mild skin irritation
GLP: yes

isodecyl methacrylate:
Species: Rabbit
Result: Skin irritation

propenoates:
Result: Skin irritation

3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine:
Species: Rabbit

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Exposure time: 4 h
Method: Other guidelines
Result: Skin irritation
GLP: yes

Serious eye damage/eye irritation

Components:

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate:
Species: Rabbit
Method: Draize Test
Result: No eye irritation

isodecyl methacrylate:
Species: Rabbit
Result: Eye irritation

propenoates:
Result: Eye irritation

3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine:
Species: Rabbit
Method: OECD Test Guideline 405
Result: Mild eye irritation
GLP: yes

Respiratory or skin sensitisation

Components:

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate:
Test Type: Maximisation Test
Exposure routes: Dermal
Species: Guinea pig
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.
GLP: yes

isodecyl methacrylate:
Test Type: LLNA (Local Lymph Node Assay)
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: Does not cause skin sensitisation.

3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine:
Test Type: Local lymph node assay (LLNA)
Species: Mouse
Method: OECD Test Guideline 429
Result: Does not cause skin sensitisation.
GLP: yes

Components:

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate:
Assessment: Mild skin irritation

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Germ cell mutagenicity

Components:

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

Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Test system: Chinese hamster fibroblasts
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

: Test Type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes

: Test Type: Ames test
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

isodecyl methacrylate:

Genotoxicity in vitro : Test Type: Ames test
Test system: Salmonella typhimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine:

Genotoxicity in vitro : Test Type: reverse mutation assay
Test system: Salmonella typhimurium and E. coli
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Genotoxicity in vivo : No data available

Carcinogenicity

No data available

Carcinogenicity - : No data available

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Assessment

Reproductive toxicity

Components:

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

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 0 , 25, 100, 500 mg/
Frequency of Treatment: 7 days/week
General Toxicity - Parent: No observed adverse effect level:
25 mg/kg body weight
General Toxicity F1: No observed adverse effect level: 500
mg/kg body weight
Method: OECD Test Guideline 421
GLP: yes

Components:

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

Effects on foetal development : Species: Rat, male and female
Application Route: Oral
Dose: 0, 25, 100, 500 mg/
Frequency of Treatment: 7 days
Developmental Toxicity: No observed adverse effect level: >
500 mg/kg body weight
Method: OECD Test Guideline 421
GLP: yes

Reproductive toxicity - Assessment : No data available

STOT - single exposure

Components:

isodecyl methacrylate:

Exposure routes: Inhalation
Target Organs: Respiratory system
Assessment: May cause respiratory irritation.

STOT - repeated exposure

No data available

Repeated dose toxicity

Components:

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

Species: Rat, male and female
NOAEL: 25 mg/kg
Application Route: oral (gavage)
Number of exposures: 7 days a week
Dose: 0, 25, 100, 500 mg/k
Method: Subchronic toxicity

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GLP: yes
Target Organs: Kidney, Liver

Components:

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate:
Repeated dose toxicity - : Mild skin irritation
Assessment

Aspiration toxicity

No data available

Experience with human exposure

General Information: No data available

Inhalation: No data available

Skin contact: No data available

Eye contact: No data available

Ingestion: No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information

Ingestion: No data available

SECTION 12: Ecological information

12.1 Toxicity

Components:

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate:
Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.79 mg/l
Exposure time: 96 h
Test Type: semi-static test

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- Method: OECD Test Guideline 203
GLP: yes
- Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): 2.57 mg/l
Exposure time: 48 h
Test Type: semi-static test
Method: OECD Test Guideline 202
GLP: yes
- Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 2.66 mg/l
Exposure time: 96 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.233 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Method: OECD Test Guideline 211
GLP: yes
- isodecyl methacrylate:
Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 470 mg/l
Exposure time: 48 h
Test Type: static test
Method: DIN 38412
- Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 0.0169 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes
- NOEC (Desmodesmus subspicatus (green algae)): 0.012 mg/l
Exposure time: 72 h
Test Type: static test
Method: OECD Test Guideline 201
GLP: yes
- M-Factor (Acute aquatic toxicity) : 10
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 0.0542 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Method: OECD Test Guideline 211
- M-Factor (Chronic aquatic toxicity) : 1

3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine:

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Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): 22 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 40 mg/l
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Method: OECD Test Guideline 201
GLP: yes

NOEC : 16 mg/l

Ecotoxicology Assessment
Chronic aquatic toxicity : May cause long lasting harmful effects to aquatic life.

1,2-dihydro-2,2,4-trimethylquinoline:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 5.8 mg/l
Exposure time: 48 h

12.2 Persistence and degradability

Components:

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

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Result: Readily biodegradable.
Exposure time: 28 d
Method: OECD Test Guideline 310
GLP: yes

isodecyl methacrylate:

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Concentration: 100 mg/l
Result: Not biodegradable
Biodegradation: 0 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: 0.132 %
Exposure time: 28 d
Method: QSAR
GLP: no

1,2-dihydro-2,2,4-trimethylquinoline:

Biodegradability : Result: Not biodegradable

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12.3 Bioaccumulative potential

No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

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 Other adverse effects

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life.
Very toxic to aquatic life with long lasting effects.
Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : The product should not be allowed to enter drains, water courses or the soil.
Do not contaminate ponds, waterways or ditches with chemical or used container.
Send to a licensed waste management company.
Dispose of as hazardous waste in compliance with local and national regulations.
Dispose of contents/ container to an approved waste disposal plant.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

IATA

14.1 UN number : UN 3082

14.2 UN proper shipping name : Environmentally hazardous substance, liquid, n.o.s.
(ISODECYL METHACRYLATE)

14.3 Transport hazard class(es) : 9

14.4 Packing group : III

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Labels : Class 9 - Miscellaneous dangerous substances and articles
Packing instruction (cargo aircraft) : 964
Packing instruction (passenger aircraft) : 964

IATA (Passenger)

Environmentally hazardous : yes

IATA (Cargo)

Environmentally hazardous : yes

IMDG

14.1 UN number : UN 3082

14.2 UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ISODECYL METHACRYLATE)

14.3 Transport hazard class(es) : 9

14.4 Packing group : III

Labels : 9

EmS Code : F-A, S-F

14.5 Environmental hazards

Marine pollutant : yes

ADR

14.1 UN number : UN 3082

14.2 UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ISODECYL METHACRYLATE)

14.3 Transport hazard class(es) : 9

14.4 Packing group : III

Labels : 9

14.5 Environmental hazards

Environmentally hazardous : yes

RID

14.1 UN number : UN 3082

14.2 UN proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (ISODECYL METHACRYLATE)

14.3 Transport hazard class(es) : 9

14.4 Packing group : III

Labels : 9

14.5 Environmental hazards

Environmentally hazardous : yes

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

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SECTION 15: Regulatory information

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

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

REACH - List of substances subject to authorisation - Future sunset date : Not applicable

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : This product does not contain substances of very high concern (Regulation (EC) No 1907/2006 (REACH), Article 57).

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances.

E1 ENVIRONMENTAL HAZARDS

The components of this product are reported in the following inventories:

TCSI : Not in compliance with the inventory

TSCA : Not On TSCA Inventory

AICS : Not in compliance with the inventory

DSL : This product contains one or several components that are not on the Canadian DSL nor NDSL.

ENCS : Not in compliance with the inventory

KECI : Not in compliance with the inventory

PICCS : Not in compliance with the inventory

IECSC : Not in compliance with the inventory

NZIoC : Not in compliance with the inventory

Inventories

AICS (Australia), DSL (Canada), IECSC (China), ENCS (Japan), KECI (Korea), NZIOIC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (United States of America (USA))

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15.2 Chemical safety assessment

Chemical Safety Assessments for all substances in this product are either Complete or Not applicable.

SECTION 16: Other information

Full text of H-Statements

H302	: Harmful if swallowed.
H315	: Causes skin irritation.
H319	: Causes serious eye irritation.
H335	: May cause respiratory irritation.
H400	: Very toxic to aquatic life.
H410	: Very toxic to aquatic life with long lasting effects.
H411	: Toxic to aquatic life with long lasting effects.
H412	: Harmful to aquatic life with long lasting effects.
H413	: May cause long lasting harmful effects to aquatic life.

Full text of other abbreviations

Acute Tox.	: Acute toxicity
Aquatic Acute	: Short-term (acute) aquatic hazard
Aquatic Chronic	: Long-term (chronic) aquatic hazard
Eye Irrit.	: Eye irritation
Skin Irrit.	: Skin irritation
STOT SE	: Specific target organ toxicity - single exposure
GB EH40	: UK. EH40 WEL - Workplace Exposure Limits
GB EH40 / TWA	: Long-term exposure limit (8-hour TWA reference period)
GB EH40 / STEL	: Short-term exposure limit (15-minute reference period)

Further information

Classification of the mixture:

Skin Irrit. 2	H315
Eye Irrit. 2	H319
STOT SE 3	H335
Aquatic Acute 1	H400
Aquatic Chronic 2	H411

Classification procedure:

Calculation method
Calculation method
Calculation method
Calculation method
Calculation method

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