

ARALDITE® 2047-1 RESIN

Version	Revision Date:	SDS Number:	Date of last issue: -
1.0	25.06.2018	400001010407	Date of first issue: 25.06.2018

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

1.1 Product identifier

Trade name : ARALDITE® 2047-1 RESIN

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

Use of the Substance/Mixture : Adhesives

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)

Flammable liquids, Category 2	H225: Highly flammable liquid and vapour.
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.

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2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :



Signal word : Danger

Hazard statements	H225	Highly flammable liquid and vapour.
	H315	Causes skin irritation.
	H317	May cause an allergic skin reaction.
	H318	Causes serious eye damage.
	H335	May cause respiratory irritation.

Precautionary statements	Prevention:	
	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
	P233	Keep container tightly closed.
	P280	Wear protective gloves/ eye protection/ face protection.
	Response:	
	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.
	P362 + P364	Take off contaminated clothing and wash it before reuse.
	P370 + P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
	Storage:	
	P235	Keep cool.
Disposal:		
P501	Dispose of contents and container in accordance with all local, regional, national and international regulations.	

Hazardous components which must be listed on the label:

methyl methacrylate

methacrylic acid

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

Additional Labelling:

EUH204 Contains isocyanates. May produce an allergic reaction.

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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)
Methyl methacrylate	80-62-6 201-297-1 607-035-00-6 01-2119452498-28	Flam. Liq. 2; H225 Skin Irrit. 2; H315 Skin Sens. 1; H317 STOT SE 3; H335	30 - 60
exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate	7534-94-3 231-403-1 607-134-00-4 01-2119886505-27	Skin Irrit. 2; H315 Eye Irrit. 2; H319 STOT SE 3; H335 Aquatic Chronic 3; H412	3 - 7
Methacrylic acid	79-41-4 201-204-4 607-088-00-5 01-2119463884-26	Acute Tox. 4; H302 Acute Tox. 3; H311 Acute Tox. 4; H332 Skin Corr. 1A; H314 Eye Dam. 1; H318 STOT SE 3; H335	1 - 3
2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate	52628-03-2 258-053-2 -	Skin Corr. 1B; H314	1 - 3
2,2'-[(4-Methylphenyl)imino]bisethanol	3077-12-1 221-359-1 -	Acute Tox. 4; H302 Eye Dam. 1; H318	1 - 3
N,N-dimethylaniline	121-69-7 204-493-5 612-016-00-0	Acute Tox. 3; H301 Acute Tox. 3; H331 Acute Tox. 3; H311 Eye Irrit. 2; H319 Carc. 2; H351 STOT RE 2; H373 Aquatic Chronic 2; H411	0.1 - 1

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.

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- Do not leave the victim unattended.
- If inhaled : If unconscious, place in recovery position and seek medical advice.
If symptoms persist, call a physician.
- 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.
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.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
Do NOT induce vomiting.
Do not give milk or alcoholic beverages.
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 : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not use a solid water stream as it may scatter and spread fire.
Do not allow run-off from fire fighting to enter drains or water courses.

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Hazardous combustion products : Carbon monoxide
Carbon dioxide (CO₂)

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.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

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).

6.4 Reference to other sections

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

SECTION 7: Handling and storage

7.1 Precautions for safe handling

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- Advice on safe handling : Avoid formation of aerosol.
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.
Take precautionary measures against static discharges.
Provide sufficient air exchange and/or exhaust in work rooms.
Open drum carefully as content may be under pressure.
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.
Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Use only explosion-proof equipment. 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. Electrical installations / working materials must comply with the technological safety standards.
- Recommended storage temperature : 2 - 8 °C
- Further information on storage stability : No decomposition if stored and applied as directed.

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

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Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
methyl methacrylate	80-62-6	TWA	50 ppm	2009/161/EU
Further information	Indicative			
		STEL	100 ppm	2009/161/EU
Further information	Indicative			
		STEL	100 ppm 416 mg/m ³	GB EH40
		TWA	50 ppm 208 mg/m ³	GB EH40
Talc (Mg ₃ H ₂ (SiO ₃) ₄)	14807-96-6	TWA (Respirable dust)	1 mg/m ³	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 MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, Talc is defined as the mineral talc together with other hydrous phyllosilicates including chlorite and carbonate materials which occur with it, but excluding amphibole asbestos and crystalline silica., 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 above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., 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 MDHS14/3., 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 should be used			
silica, amorphous, fumed, crystalline 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 MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, 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 above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., 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			

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	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 MDHS14/3., 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 should be used			
		TWA (Respirable dust)	2.4 mg/m3 (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 MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, 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 above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., 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 MDHS14/3., 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 should be used			
		TWA (inhalable dust)	6 mg/m3 (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 MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, 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 above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., 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			

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	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 MDHS14/3., 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 should be used			
		TWA (Respirable dust)	2.4 mg/m3 (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 MDHS14/3 General methods for sampling and gravimetric analysis of respirable and inhalable dust, 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 above these levels. Some dusts have been assigned specific WELs and exposure to these must comply with the appropriate limit., 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 MDHS14/3., 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 should be used			
methacrylic acid	79-41-4	TWA	20 ppm 72 mg/m3	GB EH40
		STEL	40 ppm 143 mg/m3	GB EH40
N,N-dimethylaniline	121-69-7	TWA	5 ppm 25 mg/m3	GB EH40
Further information	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			
		STEL	10 ppm 50 mg/m3	GB EH40
Further information	Can be absorbed through skin. The assigned substances are those for which there are concerns that dermal absorption will lead to systemic toxicity.			

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

Substance name	End Use	Exposure routes	Potential health effects	Value
silica, amorphous, fumed, crystalline free	Workers	Inhalation	Long-term systemic effects	4 mg/m3
exo-1,7,7-trimethylbicyclo[2.2.1]h	Workers	Dermal	Systemic effects, Long-term exposure	1.04 mg/kg

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epi-2-yl methacrylate				
	Consumer use	Dermal	Systemic effects, Long-term exposure	0.625 mg/kg
methacrylic acid	Workers	Inhalation	Systemic effects, Long-term exposure	29.6 mg/m3
	Workers	Inhalation	Local effects, Long-term exposure	88 mg/m3
	Workers	Dermal	Systemic effects, Long-term exposure	4.25 mg/kg bw/day
	Consumers	Inhalation	Systemic effects, Long-term exposure	6.3 mg/m3
	Consumers	Inhalation	Local effects, Long-term exposure	6.55 mg/m3
	Consumers	Dermal	Systemic effects, Long-term exposure	2.55 mg/kg bw/day

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

Substance name	Environmental Compartment	Value
methacrylic acid	Fresh water	0.82 mg/l
Remarks:	Equilibrium method	
	Marine water	0.82 mg/l
	Assessment Factors	
	Freshwater - intermittent	0.82 mg/l
	Assessment Factors	
	Sewage treatment plant	10 mg/l
	Assessment Factors	
	Soil	1.2 mg/kg
	Equilibrium method	
N,N-dimethylaniline	Fresh water	0.023 mg/l
	Marine water	0.002 mg/l
	Freshwater - intermittent	0.023 mg/l
	Sewage treatment plant	5.948 mg/l
	Fresh water sediment	4.942 mg/kg
	Marine sediment	4.942 mg/kg
	Soil	1.906 mg/kg

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

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problems.

Hand protection

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

Material : Solvent-resistant gloves (butyl-rubber)

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

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.

W A R N I N G ! This product contains quartz, which has been classified by IARC as carcinogenic for humans (Group 1), and which can cause silicosis and lung cancer following exposure to respirable dust. It is therefore important to take particular care to avoid inhalation exposure when mechanically processing cured material (e.g. grinding, sanding, sawing).

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : paste

Colour : grey

Odour : ester-like

Odour Threshold : No data is available on the product itself.

pH : Not applicable

Freezing point : No data is available on the product itself.

Melting point : No data is available on the product itself.

Boiling point : > 100 °C
Method: estimated

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Flash point	: 10 °C Method: closed cup
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	: 12.5 %(V) Method: estimated
Lower explosion limit / Lower flammability limit	: 2.1 %(V) Method: estimated
Vapour pressure	: < 38 hPa (20 °C) Method: estimated
Relative vapour density	: ca. 1 (20 °C)
Relative density	: No data is available on the product itself.
Density	: 1.3 g/cm ³ (20 °C)
Solubility(ies) Water solubility	: slightly soluble Method: estimated
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	: 430 °C
Decomposition temperature	: > 200 °C
Viscosity Viscosity, dynamic	: 55,000 - 80,000 mPa.s (23 °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

Stable under recommended storage conditions.

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10.2 Chemical stability

No decomposition if stored and applied as directed.

10.3 Possibility of hazardous reactions

Hazardous reactions : Vapours may form explosive mixture with air.
No decomposition if stored and applied as directed.

10.4 Conditions to avoid

Conditions to avoid : Heat, flames and sparks.

10.5 Incompatible materials

Materials to avoid : Acids and bases
Strong oxidizing agents
Reducing agents

10.6 Hazardous decomposition products

Carbon oxides
Burning produces noxious and toxic fumes.

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

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

Components:

methyl methacrylate:
Species: Rabbit
Method: OPPTS 870.2500
Result: Skin irritation

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate:
Species: Rabbit
Method: OECD Test Guideline 404

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Result: Mild skin irritation
GLP: yes

methacrylic acid:
Species: Rabbit
Method: OECD Test Guideline 404
Result: Extremely corrosive and destructive to tissue.

2-propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:
Result: Causes burns.

N,N-dimethylaniline:
Species: Rabbit
Exposure time: 4 h
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: yes

Serious eye damage/eye irritation

Product:

Remarks: May cause irreversible eye damage.

Respiratory or skin sensitisation

Product:

Remarks: Causes sensitisation.

Components:

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

Germ cell mutagenicity

Components:

methyl methacrylate:
Genotoxicity in vitro : Test Type: Microbial mutagenesis assay (Ames test)
Test system: Salmonella typhimurium
Method: OECD Test Guideline 471
Result: negative

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

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: 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

methacrylic acid:
Genotoxicity in vitro

: Concentration: 33 - 4000 ug/plate
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
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
Concentration: 1000, 1500, 2000, 3000, 4000 a
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
Concentration: 5, 10, 20, 40, 60, 80, 100 µg/
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes

N,N-dimethylaniline:
Genotoxicity in vitro

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

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Method: Other guidelines
Result: positive

: Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 3, 10, 33, 100, 333, 1000 µg/P
Metabolic activation: with and without metabolic activation
Method: Other guidelines
Result: negative

: Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 0.0025, 0.005, 0.025, 0.05 mg/p
Metabolic activation: with and without metabolic activation
Method: Other guidelines
Result: negative

: Test Type: Ames test
Test system: Salmonella typhimurium
Concentration: 0 - 1000 µg/plate
Metabolic activation: with and without metabolic activation
Method: Other guidelines
Result: negative

Components:

methacrylic acid:

Genotoxicity in vivo

: Cell type: Somatic
Application Route: Inhalation
Exposure time: 2 h
Dose: 100 - 1000 ppm
Method: OECD Test Guideline 475
Result: Not classified due to inconclusive data.

Application Route: Inhalation
Exposure time: 6 h
Dose: 100 - 9000 ppm
Method: OECD Test Guideline 478
Result: negative

Carcinogenicity

Components:

methyl methacrylate:

Species: Rat, male and female

Application Route: Oral

Exposure time: 2 Years

Dose: 6, 60, 2000 ppm

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Frequency of Treatment: once daily
No observed adverse effect level: 90.3 mg/kg bw/day
Result: negative

methacrylic acid:
Species: Rat, male and female
Application Route: Inhalation
Exposure time: 24 month(s)
Dose: 250 - 1000 ppm
Frequency of Treatment: 5 daily
Method: OECD Test Guideline 453
Result: negative

Species: Rat, male and female
Application Route: Oral
Exposure time: 24 month(s)
Dose: 12 - 3300 ppm
Frequency of Treatment: 7 daily
Result: negative

N,N-dimethylaniline:
Species: Rat, male and female
Application Route: Oral
Exposure time: 2 years
Dose: 0, 3, or 30 mg/kg/day
Frequency of Treatment: 5 day per week
No observed adverse effect level: 3 - 30 mg/kg body weight
Method: OECD, Other
Result: positive

Species: Rat, male
Application Route: Oral
Exposure time: 2 years
Method: OECD, Other
Result: positive

Species: Rat, female
Exposure time: 2 years
Result: negative

Components:

N,N-dimethylaniline:
Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies

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

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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

methacrylic acid:

Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Dose: 0, 50, 150, 400 milligram per kilogram
Fertility: No observed adverse effect level F1: 400 mg/kg body
weight
Symptoms: Reduced body weight
Method: OPPTS 870.3800
GLP: yes

N,N-dimethylaniline:

Species: Mouse, female
Application Route: Oral
Dose: 2920 mg/kg
Method: This information is not available.

Components:

methyl methacrylate:
Effects on foetal
development

: Species: Rat
Application Route: Inhalation
Dose: 99, 304, 1178 parts per million
Teratogenicity: No observed adverse effect concentration F1:
8,300 mg/m³
Embryo-foetal toxicity: No observed adverse effect
concentration F1: 8,300 mg/m³
Method: OECD Test Guideline 414
Result: No teratogenic effects
GLP: yes

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

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

methacrylic acid:

Test Type: Pre-natal
Species: Rat, male and female
Application Route: Inhalation
Dose: 200, 300 ppm
Embryo-foetal toxicity: No observed adverse effect

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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
General Toxicity Maternal: No observed adverse effect level:
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.
GLP: yes

N,N-dimethylaniline:

Species: Mouse
Application Route: Oral
Frequency of Treatment: 7 - 13 days
Developmental Toxicity: No observed adverse effect level:
365 mg/kg body weight
Method: Other guidelines
Result: No adverse effects

Reproductive toxicity - Assessment : No data available

STOT - single exposure

Components:

methyl methacrylate:
Exposure routes: Inhalation
Target Organs: Respiratory Tract
Assessment: May cause respiratory irritation.

methacrylic acid:
Target Organs: Respiratory system
Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.

STOT - repeated exposure

Components:

N,N-dimethylaniline:
Target Organs: spleen
Assessment: The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

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Repeated dose toxicity

Components:

methyl methacrylate:

Species: Rat, male and female

NOAEL: 124.1 mg/kg

Application Route: oral (drinking water)

Exposure time: 2 years Number of exposures: daily

Dose: 6, 60, 2000 ppm

Remarks: see user defined free text

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

GLP: yes

Target Organs: Kidney, Liver

methacrylic acid:

Species: Rat, male and female

: 500

Test atmosphere: vapour

Exposure time: 2 yr Number of exposures: 5 d

Method: OECD Test Guideline 453

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

Species: Rat, male and female

NOEL: 1000 mg/kg

Application Route: Oral

Exposure time: 28 d Dose: 0, 100, 300, or 1000 MKD

Method: OECD Test Guideline 407

GLP: yes

N,N-dimethylaniline:

Species: Rat, male and female

NOAEL: 31.3 mg/kg

Application Route: oral (gavage)

Exposure time: 14 days Number of exposures: 5 days/week

Dose: 93.75, 187.5, 375, 750 or 1500

Method: No information available.

Species: Rat

LOEC: 0.3

Application Route: Inhalation

Exposure time: 24 hr/day for 100 days Dose: 0.3 mg/m³

Method: Subchronic toxicity

Components:

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

Repeated dose toxicity - : Mild skin irritation

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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

Product:

Remarks: Solvents may degrease the skin.

SECTION 12: Ecological information

12.1 Toxicity

Components:

methyl methacrylate:

Toxicity to fish : LC50 : 191 mg/l
Exposure time: 96 h

LC50 (Oncorhynchus mykiss (rainbow trout)): > 79 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: EPA OPPTS 850.1400
GLP: yes

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Toxicity to daphnia and other aquatic invertebrates : EC50 : 69 mg/l
Exposure time: 48 h

Toxicity to algae : EC50 : > 110 mg/l
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 37 mg/l
Exposure time: 21 d
Species: Daphnia magna (Water flea)
Test Type: flow-through test
Method: OECD Test Guideline 211
GLP: yes

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
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 : 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

methacrylic acid:

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

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

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

Toxicity to microorganisms : EC50 (Pseudomonas putida): 270 mg/l
Exposure time: 17 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38 412 Part 8

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

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
Test substance: Fresh water
Method: OECD Test Guideline 211

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
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
Method: OECD Test Guideline 202
GLP: yes

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

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

N,N-dimethylaniline:

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Toxicity to fish	: EL50 (Pimephales promelas (fathead minnow)): 78.2 mg/l Exposure time: 96 h Test Type: flow-through test Method: see user defined free text
Toxicity to daphnia and other aquatic invertebrates	: EC50 (Daphnia magna (Water flea)): 4.4 - 8.1 mg/l Exposure time: 24 h Test Type: static test Method: see user defined free text Remarks: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Toxicity to algae	: Lowest Observed Effect Concentration (Chlorella pyrenoidosa (aglae)): 22 mg/l Exposure time: 72 h Test Type: static test Method: see user defined free text
Toxicity to microorganisms	: LC50 (Other): 110 mg/l End point: Growth rate Exposure time: 24 h Test Type: static test Method: see user defined free text
Toxicity to fish (Chronic toxicity)	: LC0: 34 - 101 mg/l Exposure time: 6 d Species: Cyprinus carpio (Carp) Test Type: static test Method: see user defined free text
Toxicity to soil dwelling organisms	: LC50: 0.2428 mg/cm2 Exposure time: 48 h Species: Eisenia fetida (earthworms) Method: see user defined free text LC50: 0.1366 mg/cm2 Exposure time: 48 h Species: Eisenia fetida (earthworms) Method: see user defined free text
Plant toxicity	: EC50: 19.97 mg/l End point: Growth inhibition Test period: 72 d Species: Lactuca sativa (lettuce) Method: see user defined free text 57.621 mg/l Test period: 72 d Species: Lactuca sativa (lettuce) Method: see user defined free text

12.2 Persistence and degradability

Components:

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methyl methacrylate:

Biodegradability : Result: Readily biodegradable.
Biodegradation: > 60 %
Exposure time: 28 d

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

methacrylic acid:

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

Stability in water

: pH: 6
Method: No information available.
GLP: yes
Remarks: No data available

Photodegradation

: Test Type: Air

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

Biodegradability : Test Type: aerobic
Inoculum: activated sludge
Concentration: 54.6 mg/l
Result: Readily biodegradable.
Biodegradation: 93.1 %
Exposure time: 28 d
Method: OECD Test Guideline 301F
GLP: yes

N,N-dimethylaniline:

Biodegradability : Result: Readily biodegradable.
Method: Other guidelines

12.3 Bioaccumulative potential

Components:

methyl methacrylate:

Bioaccumulation : Bioconcentration factor (BCF): 3

Partition coefficient: n-octanol/water

: log Pow: 1.38

methacrylic acid:

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

N,N-dimethylaniline:
Bioaccumulation : Species: Fish
Bioconcentration factor (BCF): 16
Method: see user defined free text

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.
Harmful to aquatic life.

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.

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 1133

14.2 UN proper shipping name : Adhesives

14.3 Transport hazard class(es) : 3

14.4 Packing group : II

Labels : Flammable Liquids

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Packing instruction (cargo aircraft) : 364
Packing instruction (passenger aircraft) : 353

IMDG

14.1 UN number : UN 1133
14.2 UN proper shipping name : ADHESIVES
14.3 Transport hazard class(es) : 3
14.4 Packing group : II
Labels : 3
EmS Code : F-E, S-D
14.5 Environmental hazards
Marine pollutant : no

ADR

14.1 UN number : UN 1133
14.2 UN proper shipping name : ADHESIVES
14.3 Transport hazard class(es) : 3
14.4 Packing group : II
Labels : 3
14.5 Environmental hazards
Environmentally hazardous : no

RID

14.1 UN number : UN 1133
14.2 UN proper shipping name : ADHESIVES
14.3 Transport hazard class(es) : 3
14.4 Packing group : II
Labels : 3
14.5 Environmental hazards
Environmentally hazardous : no

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

Not applicable for product as supplied.

SECTION 15: Regulatory information

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

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).
REACH - List of substances subject to authorisation	: Not applicable

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

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.

AICS : Not in compliance with the inventory

NZIoC : Not in compliance with the inventory

ENCS : Not in compliance with the inventory

KECI : Not in compliance with the inventory

PICCS : Not in compliance with the inventory

IECSC : Low volume exemption

TCSI : Not in compliance with the inventory

TSCA : Not On TSCA 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))

15.2 Chemical safety assessment

SECTION 16: Other information

Full text of H-Statements

H225	: Highly flammable liquid and vapour.
H301	: Toxic if swallowed.
H302	: Harmful if swallowed.

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H311	: Toxic in contact with skin.
H314	: Causes severe skin burns and eye damage.
H315	: Causes skin irritation.
H317	: May cause an allergic skin reaction.
H318	: Causes serious eye damage.
H319	: Causes serious eye irritation.
H331	: Toxic if inhaled.
H332	: Harmful if inhaled.
H335	: May cause respiratory irritation.
H351	: Suspected of causing cancer.
H373	: May cause damage to organs through prolonged or repeated exposure.
H411	: 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 Chronic	: Long-term (chronic) aquatic hazard
Carc.	: Carcinogenicity
Eye Dam.	: Serious eye damage
Eye Irrit.	: Eye irritation
Flam. Liq.	: Flammable liquids
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
2009/161/EU	: Europe. COMMISSION DIRECTIVE 2009/161/EU establishing a third list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Commission Directive 2000/39/EC
GB EH40	: UK. EH40 WEL - Workplace Exposure Limits
2009/161/EU / TWA	: Limit Value - eight hours
2009/161/EU / STEL	: Short term exposure limit
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:

Flam. Liq. 2	H225
Skin Irrit. 2	H315
Eye Dam. 1	H318
Skin Sens. 1	H317
STOT SE 3	H335

Classification procedure:

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

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