# ARALDITE® 2080-05 A

| Version | Revision Date: | SDS Number: | Date of last issue: 11/30/2020 |
|---|---|---|---|
| 1.1 | 12/01/2020 | 400000010367 | Date of first issue: 11/30/2020 |

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## SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2080-05 A

**Manufacturer or supplier's details**

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : Non-Emergency: (800) 257-5547

E-mail address of person responsible for the SDS : Global_Product_EHS_AdMat@huntsman.com

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

**Recommended use of the chemical and restrictions on use**

Recommended use : Resin

## SECTION 2. HAZARDS IDENTIFICATION

**GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Flammable liquids : Category 4

Skin irritation : Category 2

Serious eye damage : Category 1

Skin sensitisation : Category 1

Specific target organ toxicity - single exposure : Category 3 (Respiratory system)

Short-term (acute) aquatic hazard : Category 2

Long-term (chronic) aquatic hazard : Category 3



**GHS label elements**

Hazard pictograms :

Signal word : Danger

Hazard statements : H227 Combustible liquid.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H335 May cause respiratory irritation.
H401 Toxic to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P210 Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.
**Response:**
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
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.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
**Storage:**
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.
**Disposal:**
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

**Other hazards**

None known.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

**Hazardous components**

| Chemical name | CAS-No. | Concentration (% w/w) |
|---|---|---|
| exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate | 7534-94-3 | 20 - 30 |
| 2-hydroxyethyl methacrylate | 868-77-9 | 10 - 20 |

| | | |
|---|---|---|
| methacrylic acid, monoester with propane-1,2-diol | 27813-02-1 | 10 - 20 |
| 2-Propenoic acid, 2-hydroxyethyl ester, polymer with 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane, 2-oxepanone and 2,2'-oxybis[ethanol] | 72162-39-1 | 5 - 10 |
| methacrylic acid | 79-41-4 | 3 - 5 |
| 3,9-bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane | 26741-53-7 | 0.1 - 1 |
| 2,6-di-tert-butyl-p-cresol | 128-37-0 | 0.1 - 1 |

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

## SECTION 4. FIRST AID MEASURES

| | | |
|---|---|---|
| General advice | : | Move out of dangerous area.<br>Consult a physician.<br>Show this safety data sheet to the doctor in attendance.<br>Treat symptomatically.<br>Get medical attention if symptoms occur. |
| If inhaled | : | If inhaled, remove to fresh air.<br>Get medical attention if symptoms occur. |
| In case of skin contact | : | If skin irritation persists, call a physician.<br>If on skin, rinse well with water.<br>If on clothes, remove clothes. |
| In case of eye contact | : | Small amounts splashed into eyes can cause irreversible tissue damage and blindness.<br>In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.<br>Continue rinsing eyes during transport to hospital.<br>Remove contact lenses.<br>Keep eye wide open while rinsing.<br>If eye irritation persists, consult a specialist. |
| If swallowed | : | Keep respiratory tract clear.<br>Never give anything by mouth to an unconscious person.<br>If symptoms persist, call a physician.<br>Take victim immediately to hospital. |
| Most important symptoms and effects, both acute and delayed | : | None known. |
| Protection of first-aiders | : | First Aid responders should pay attention to self-protection and use the recommended protective clothing<br>If potential for exposure exists refer to Section 8 for specific personal protective equipment. |

Avoid inhalation, ingestion and contact with skin and eyes.
No action shall be taken involving any personal risk or without suitable training.
It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

Notes to physician : Treat symptomatically.

## SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical

Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire

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

Hazardous combustion products : Carbon oxides

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.

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

## SECTION 6. ACCIDENTAL RELEASE MEASURES

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

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.

Methods and materials for containment and 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.

## SECTION 7. HANDLING AND STORAGE

| | | |
|---|---|---|
| Advice on protection against fire and explosion | : | Do not spray on a naked flame or any incandescent material.<br>Keep away from open flames, hot surfaces and sources of ignition. |
| Advice on safe handling | : | Use only with adequate ventilation/personal protection.<br>Provide sufficient air exchange and/or exhaust in work rooms.<br>For personal protection see section 8.<br>Keep container closed when not in use.<br>Avoid formation of aerosol.<br>Do not breathe vapours or spray mist.<br>Avoid exposure - obtain special instructions before use.<br>Avoid contact with skin and eyes.<br>Smoking, eating and drinking should be prohibited in the application area.<br>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. |
| Conditions for safe storage | : | No smoking.<br>Keep container tightly closed in a dry and well-ventilated place.<br>Containers which are opened must be carefully resealed and kept upright to prevent leakage.<br>Observe label precautions.<br>Keep in properly labelled containers. |
| Materials to avoid | : | For incompatible materials please refer to Section 10 of this SDS. |
| Recommended storage temperature | : | 36 - 46 °F / 2 - 8 °C |
| Further information on storage stability | : | Stable under normal conditions. |

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Components with workplace control parameters**

| Components | CAS-No. | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis |
|---|---|---|---|---|
| methacrylic acid | 79-41-4 | TWA | 20 ppm | ACGIH |
| | | TWA | 20 ppm<br>70 mg/m3 | NIOSH REL |

| | | | | |
|---|---|---|---|---|
| | | TWA | 20 ppm<br>70 mg/m3 | OSHA P0 |
| 2,6-di-tert-butyl-p-cresol | 128-37-0 | TWA (Inhalable fraction and vapor) | 2 mg/m3 | ACGIH |
| | | TWA | 10 mg/m3 | NIOSH REL |
| | | TWA | 10 mg/m3 | OSHA P0 |

**Personal protective equipment**

Respiratory protection : Ensure adequate ventilation.
Suitable respiratory equipment:
Respirator with a half face mask
Recommended Filter type:
Combined particulates and organic vapour type
Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Filter type : Filter type A-P2 (organic vapours, particles)

Hand protection

Remarks : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.
The suitability for a specific workplace should be discussed with the producers of the protective gloves.

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

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

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

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : paste

Colour : off-white

Odour : slight

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

pH : substance/mixture is non-soluble (in water)

| | | |
|---|---|---|
| Melting point/freezing point | : | No data is available on the product itself. |
| Boiling point | : | No data is available on the product itself. |
| Flash point | : | > 140 °F / > 60 °C<br>Method: estimated |
| Evaporation rate | : | No data is available on the product itself. |
| Flammability (solid, gas) | : | No data is available on the product itself. |
| Flammability (liquids) | : | 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/cm3<br>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. |
| Thermal decomposition | : | No data is available on the product itself. |
| Self-Accelerating decomposition temperature (SADT) | : | No data is available on the product itself. |
| Viscosity | | |
| Viscosity, dynamic | : | 15,000 - 35,000 mPa.s (77 °F / 25 °C) |
| Explosive properties | : | No data is available on the product itself. |
| Oxidizing properties | : | No data is available on the product itself. |
| Particle size | : | No data is available on the product itself. |

## SECTION 10. STABILITY AND REACTIVITY

| | | |
|---|---|---|
| Reactivity | : | No dangerous reaction known under conditions of normal use. |
| Chemical stability | : | Stable under normal conditions. |
| Possibility of hazardous reactions | : | Vapours may form explosive mixture with air. |
| Conditions to avoid | : | Heat, flames and sparks. |
| Incompatible materials | : | None known. |
| Hazardous decomposition products | : | carbon dioxide<br>carbon monoxide |

## SECTION 11. TOXICOLOGICAL INFORMATION

| | | |
|---|---|---|
| Information on likely routes of exposure | : | No data is available on the product itself. |

**Acute toxicity**

| | | |
|---|---|---|
| Acute oral toxicity - Product | : | Acute toxicity estimate : > 5,000 mg/kg<br>Method: Calculation method |
| Acute inhalation toxicity - Product | : | Acute toxicity estimate: > 200 mg/l<br>Exposure time: 4 h<br>Test atmosphere: vapour<br>Method: Calculation method |
| Acute dermal toxicity - Product | : | Acute toxicity estimate : > 5,000 mg/kg<br>Method: Calculation method |
| 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

2-hydroxyethyl methacrylate**:**
Species: Rabbit
Result: Skin irritation

methacrylic acid, monoester with propane-1,2-diol**:**
Species: Rabbit
Assessment: No skin irritation

2-Propenoic acid, 2-hydroxyethyl ester, polymer with 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane, 2-oxepanone and 2,2'-oxybis[ethanol]**:**
Result: Skin irritation

methacrylic acid**:**
Species: Rabbit
Assessment: Causes severe burns.
Method: OECD Test Guideline 404
Result: Extremely corrosive and destructive to tissue.
GLP: yes

3,9-bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane**:**
Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: No skin irritation

2,6-di-tert-butyl-p-cresol**:**
Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: No skin irritation
GLP: yes

**Serious eye damage/eye irritation**

**Components:**

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

2-hydroxyethyl methacrylate**:**
Species: Rabbit
Result: Irritation to eyes, reversing within 7 days

methacrylic acid, monoester with propane-1,2-diol**:**
Species: Rabbit
Result: Eye irritation

2-Propenoic acid, 2-hydroxyethyl ester, polymer with 5-isocyanato-1-(isocyanatomethyl)-1,3,3-trimethylcyclohexane, 2-oxepanone and 2,2'-oxybis[ethanol]**:**
Result: Eye irritation

methacrylic acid**:**
Species: Rabbit
Result: Irreversible effects on the eye
Assessment: Risk of serious damage to eyes.
Method: Draize Test
GLP: no

3,9-bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane**:**
Species: Rabbit
Result: No eye irritation
Assessment: No eye irritation
Method: OECD Test Guideline 405

2,6-di-tert-butyl-p-cresol**:**
Species: Rabbit
Result: No eye irritation
Assessment: No eye irritation
Method: OECD Test Guideline 405
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

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.

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.

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.

2,6-di-tert-butyl-p-cresol**:**
Exposure routes: Skin
Species: Humans
Result: Does not cause skin sensitisation.

**Components:**

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

**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

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
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

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

2,6-di-tert-butyl-p-cresol**:**
Genotoxicity in vitro : Test Type: reverse mutation assay
Metabolic activation: with and without metabolic activation
Result: negative

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

**Components:**

2-hydroxyethyl methacrylate**:**
Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Rat
Application Route: Oral
Method: OECD Test Guideline 474
Result: negative

Test Type: Chromosome aberration test in vitro
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
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
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

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

2,6-di-tert-butyl-p-cresol**:**

Genotoxicity in vivo : Application Route: Intraperitoneal injection
Dose: 75 mg/kg
Result: negative

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

Germ cell mutagenicity-Assessment : No data available

**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
Frequency of Treatment: 5 days/week
NOAEL: >= 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
LOAEL: ca. 2.05 mg/l

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

**IARC** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**ACGIH** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

**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

2-hydroxyethyl methacrylate:

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

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

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

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
GLP: no

**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

2-hydroxyethyl methacrylate**:**

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: 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.

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

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

Reproductive toxicity - Assessment : No data available

**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.

**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
GLP: yes
Target Organs: Kidney, Liver



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 mg/m3
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

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 mg/kg/d
Application Route: Ingestion
Exposure time: 2,160 h
Number of exposures: 7 d
Method: Subchronic toxicity

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

**Components:**

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

**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

### Ecotoxicity

**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
Method: OECD Test Guideline 203
GLP: yes

2-hydroxyethyl methacrylate:

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

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

Toxicity to fish : LC50 (Leuciscus idus (Golden orfe)): 493 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: DIN 38412

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: Fish Acute Toxicity Test
GLP: yes
Remarks: Toxic to aquatic organisms.

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

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

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
GLP: no

**Components:**

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

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

2-hydroxyethyl methacrylate**:**

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

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

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

methacrylic acid**:**

| | | |
|---|---|---|
| Toxicity to daphnia and other aquatic invertebrates | : | EC50 (Daphnia magna (Water flea)): > 130 mg/l<br>End point: Immobilization<br>Exposure time: 48 h<br>Test Type: flow-through test<br>Analytical monitoring: yes<br>Test substance: Fresh water<br>Method: Aquatic Invertebrate Acute Toxicity Test, Freshwater Daphnids<br>GLP: yes |

2,6-di-tert-butyl-p-cresol**:**

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

**Components:**

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

| | | |
|---|---|---|
| Toxicity to algae/aquatic plants | : | ErC50 (Pseudokirchneriella subcapitata (green algae)): 2.66 mg/l<br>Exposure time: 96 h<br>Test Type: static test<br>Method: OECD Test Guideline 201<br>GLP: yes |

2-hydroxyethyl methacrylate**:**

| | | |
|---|---|---|
| Toxicity to algae/aquatic plants | : | ErC50 (Selenastrum capricornutum (green algae)): 836 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201<br><br>NOEC (Selenastrum capricornutum (green algae)): 400 mg/l<br>Exposure time: 72 h<br>Method: OECD Test Guideline 201 |

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

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

methacrylic acid:

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
Exposure time: 72 h
Test Type: static test
Analytical monitoring: yes
Test substance: Fresh water
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:

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

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

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
GLP: yes

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
GLP: yes

**Components:**

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

M-Factor (Acute aquatic toxicity) : 1

**Components:**

methacrylic acid:

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

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

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

2,6-di-tert-butyl-p-cresol:
Toxicity to fish (Chronic toxicity) : NOEC (Oryzias latipes (Orange-red killifish)): 0.053 mg/l
Exposure time: 30 d
Test substance: Fresh water
Method: OECD Test Guideline 210
GLP: yes

NOEC (Fish): >= 23.8 mg/l
Exposure time: 70 d
Test substance: Fresh water

**Components:**

exo-1,7,7-trimethylbicyclo[2.2.1]hept-2-yl methacrylate:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.233 mg/l
Exposure time: 21 d
Test Type: semi-static test
Method: OECD Test Guideline 211
GLP: yes

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

methacrylic acid, monoester with propane-1,2-diol:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 45.2 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

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

3,9-bis(2,4-di-tert-butylphenoxy)-2,4,8,10-tetraoxa-3,9-diphosphaspiro[5.5]undecane:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.1 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

2,6-di-tert-butyl-p-cresol:
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.096 mg/l
Exposure time: 21 d

(Chronic toxicity)

Test substance: Fresh water
Method: OECD Test Guideline 211
GLP: yes

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

**Components:**

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

M-Factor (Chronic aquatic toxicity) : 1

2,6-di-tert-butyl-p-cresol**:**

M-Factor (Chronic aquatic toxicity) : 1

**Components:**

methacrylic acid**:**

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

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

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

2,6-di-tert-butyl-p-cresol**:**

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

Toxicity to soil dwelling organisms : No data available

Plant toxicity : No data available

Sediment toxicity : No data available

Toxicity to terrestrial organisms : No data available

Ecotoxicology Assessment

**Components:**

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

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

**Components:**

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

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

Toxicity Data on Soil : No data available

Other organisms relevant to the environment : No data available

**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

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

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

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.
Biodegradation: < 10 %
Exposure time: 28 d

2,6-di-tert-butyl-p-cresol**:**

Biodegradability : Result: Not biodegradable

Biochemical Oxygen Demand (BOD) : No data available

| | | |
|---|---|---|
| Chemical Oxygen Demand (COD) | : | No data available |
| BOD/COD | : | No data available |
| ThOD | : | No data available |
| BOD/ThOD | : | No data available |
| Dissolved organic carbon (DOC) | : | No data available |
| Physico-chemical removability | : | No data available |

**Components:**

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

| | | |
|---|---|---|
| Stability in water | : | Degradation half life(DT50): 73.3 d (104 °F / 40 °C) pH: 7<br>Method: OECD Test Guideline 111<br>GLP: No information available.<br><br>Degradation half life(DT50): 38.2 d (104 °F / 40 °C) pH: 9<br>Method: OECD Test Guideline 111<br>GLP: No information available. |
| Photodegradation | : | No data available |
| Impact on Sewage Treatment | : | No data available |

**Bioaccumulative potential**

**Components:**

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

| | | |
|---|---|---|
| Bioaccumulation | : | Bioconcentration factor (BCF): 164 |

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

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

**Components:**

2-hydroxyethyl methacrylate:

| | | |
|---|---|---|
| Partition coefficient: n-octanol/water | : | log Pow: 0.42 (77 °F / 25 °C)<br>pH: 5.9 - 6.1 |

methacrylic acid:

| | | |
|---|---|---|
| Partition coefficient: n-octanol/water | : | log Pow: 0.93 (72 °F / 22 °C)<br>pH: 2.2 |

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

| | | |
|---|---|---|
| Partition coefficient: n-octanol/water | : | log Pow: 10.9 (77 °F / 25 °C) |

2,6-di-tert-butyl-p-cresol**:**

| | | |
|---|---|---|
| Partition coefficient: n-octanol/water | : | log Pow: 5.2<br>GLP: yes |

**Mobility in soil**

| | | |
|---|---|---|
| Mobility | : | No data available |

**Components:**

2,6-di-tert-butyl-p-cresol**:**

| | | |
|---|---|---|
| Distribution among environmental compartments | : | Koc: 8183 |
| Stability in soil | : | No data available |

**Other adverse effects**

| | | |
|---|---|---|
| Environmental fate and pathways | : | No data available |
| Results of PBT and vPvB assessment | : | No data available |
| Endocrine disrupting potential | : | No data available |
| Adsorbed organic bound halogens (AOX) | : | No data available |

**Hazardous to the ozone layer**

| | | |
|---|---|---|
| Ozone-Depletion Potential | : | Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances<br>Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B). |
| Additional ecological information - Product | : | An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.<br>Toxic to aquatic life.<br>Harmful to aquatic life with long lasting effects. |
| Global warming potential (GWP) | : | No data available |

## SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

| | | |
|---|---|---|
| Waste from residues | : | The product should not be allowed to enter drains, water courses or the soil.<br>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

### International Regulations

**IATA**
Not regulated as dangerous goods

**IMDG**
Not regulated as dangerous goods

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**
Not applicable for product as supplied.

### National Regulations

**DOT Classification**

| | | |
|---|---|---|
| UN/ID/NA number | : | NA 1993 |
| Proper shipping name | : | COMBUSTIBLE LIQUID, N.O.S. (METHACRYLIC ACID) |
| Class | : | CBL |
| Packing group | : | III |
| Labels | : | NONE |
| ERG Code | : | 128 |
| Marine pollutant | : | no |
| Remarks | : | Above applies only to containers over 119 gallons or 450 liters. Not regulated if shipped in packages less than or equal to 119 gallons (450 liters). |

**Special precautions for user**
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

## SECTION 15. REGULATORY INFORMATION

### CERCLA Reportable Quantity

| Components | CAS-No. | Component RQ (lbs) | Calculated product RQ (lbs) |
|---|---|---|---|
| ethylene oxide | 75-21-8 | 10 | * |
| Ethylene glycol | 107-21-1 | 5000 | * |
| p-cresol | 106-44-5 | 100 | * |
| methanol | 67-56-1 | 5000 | * |

*: Calculated RQ exceeds reasonably attainable upper limit.

**SARA 311/312 Hazards** : Flammable (gases, aerosols, liquids, or solids)
Respiratory or skin sensitisation
Skin corrosion or irritation
Serious eye damage or eye irritation
Specific target organ toxicity (single or repeated exposure)

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

**California Prop. 65**

WARNING: This product can expose you to chemicals including ethylene oxide, which is/are known to the State of California to cause cancer, and
Ethylene glycol, methanol, ethylene oxide, which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

**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 : 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**

AICS (Australia), AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**TSCA - 5(a) Significant New Use Rule List of Chemicals**

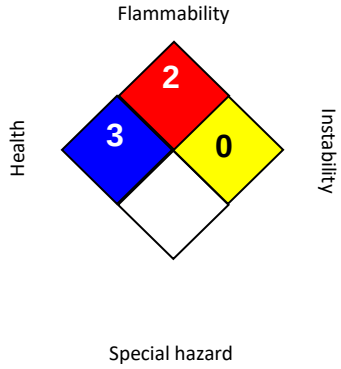
No substances are subject to a Significant New Use Rule.

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**
No substances are subject to TSCA 12(b) export notification requirements.

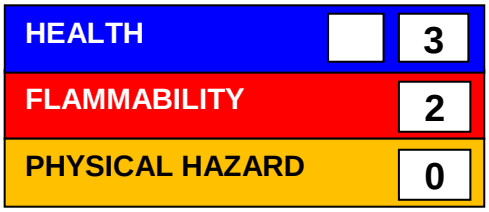
## SECTION 16. OTHER INFORMATION

**Further information**

**NFPA 704:**




**HMIS® IV:**




HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard

| | | |
|---|---|---|
| Revision Date | : | 12/01/2020 |
| ACGIH | : | USA. ACGIH Threshold Limit Values (TLV) |
| NIOSH REL | : | USA. NIOSH Recommended Exposure Limits |
| OSHA P0 | : | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000 |
| ACGIH / TWA | : | 8-hour, time-weighted average |
| NIOSH REL / TWA | : | Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek |
| OSHA P0 / TWA | : | 8-hour time weighted average |

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

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.

# HARDENER 2080 B

| Version | Revision Date: | SDS Number: | Date of last issue: - |
|---|---|---|---|
| 1.0 | 11/30/2020 | 400000010343 | Date of first issue: 11/30/2020 |

Print Date 12/07/2021

## SECTION 1. IDENTIFICATION

Product name : HARDENER 2080 B

**Manufacturer or supplier's details**

Company name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980
The Woodlands,
TX 77387
United States of America (USA)
Telephone : Non-Emergency: (800) 257-5547

E-mail address of person responsible for the SDS : Global_Product_EHS_AdMat@huntsman.com

Emergency telephone number : Chemtrec: (800) 424-9300 or (703) 527-3887

**Recommended use of the chemical and restrictions on use**

Recommended use : Hardener

## SECTION 2. HAZARDS IDENTIFICATION

**GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Skin irritation : Category 2

Eye irritation : Category 2A

Skin sensitisation : Category 1

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1



**GHS label elements**

Hazard pictograms :

Signal word : Warning

Hazard statements : H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ eye protection/ face protection.
**Response:**
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P337 + P313 If eye irritation persists: Get medical advice/ attention.
P362 Take off contaminated clothing and wash before reuse.
P391 Collect spillage.
**Storage:**
Not available
**Disposal:**
P501 Dispose of contents/container to an approved facility in accordance with local, regional, national and international regulations.

**Other hazards**

None known.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

**Hazardous components**

| Chemical name | CAS-No. | Concentration (% w/w) |
|---|---|---|
| aluminium hydroxide | 21645-51-2 | 20 - 30 |
| dibenzoyl peroxide | 94-36-0 | 10 - 20 |
| 2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane | 1675-54-3 | 10 - 20 |
| silicon dioxide | 7631-86-9 | 0.1 - 1 |

The specific chemical identity and/or exact percentage (concentration) of composition may be withheld as a trade secret.

Both 25068-38-6 and 1675-54-3 can be used to describe the epoxy resin which is produced through the reaction of bisphenol A and epichlorohydrin

## SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.
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.<br>Get medical attention if symptoms occur. |
| In case of skin contact | : | If skin irritation persists, call a physician.<br>If on skin, rinse well with water.<br>If on clothes, remove clothes. |
| In case of eye contact | : | Immediately flush eye(s) with plenty of water.<br>Remove contact lenses.<br>Keep eye wide open while rinsing.<br>If eye irritation persists, consult a specialist. |
| If swallowed | : | Keep respiratory tract clear.<br>Never give anything by mouth to an unconscious person.<br>If symptoms persist, call a physician. |
| Most important symptoms and effects, both acute and delayed | : | None known. |
| Protection of first-aiders | : | First Aid responders should pay attention to self-protection and use the recommended protective clothing<br>If potential for exposure exists refer to Section 8 for specific personal protective equipment.<br>Avoid inhalation, ingestion and contact with skin and eyes.<br>No action shall be taken involving any personal risk or without suitable training.<br>It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. |
| Notes to physician | : | Treat symptomatically. |

## SECTION 5. FIREFIGHTING MEASURES

| | | |
|---|---|---|
| Suitable extinguishing media | : | Water spray<br>Alcohol-resistant foam<br>Carbon dioxide (CO2)<br>Dry chemical |
| Unsuitable extinguishing media | : | Exercise caution when using a high volume water jet as it may scatter and spread fire |
| Specific hazards during firefighting | : | Do not allow run-off from fire fighting to enter drains or water courses. |
| Hazardous combustion products | : | Metal oxides<br>Carbon oxides<br>Halogenated compounds |
| 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.<br>Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. |
| Special protective equipment for firefighters | : | Wear self-contained breathing apparatus for firefighting if necessary. |

## SECTION 6. ACCIDENTAL RELEASE MEASURES

| | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Use personal protective equipment.<br>Avoid dust formation.<br>Avoid breathing dust.<br>Refer to protective measures listed in sections 7 and 8. |
| Environmental precautions | : | Prevent product from entering drains.<br>Prevent further leakage or spillage if safe to do so.<br>If the product contaminates rivers and lakes or drains inform respective authorities. |
| Methods and materials for containment and cleaning up | : | Keep in suitable, closed containers for disposal. |

## SECTION 7. HANDLING AND STORAGE

| | | |
|---|---|---|
| Advice on protection against fire and explosion | : | Avoid dust formation.<br>Provide appropriate exhaust ventilation at places where dust is formed. |
| Advice on safe handling | : | Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons.<br>Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.<br>Avoid formation of respirable particles.<br>Do not breathe vapours/dust.<br>Avoid exposure - obtain special instructions before use.<br>Avoid contact with skin and eyes.<br>For personal protection see section 8.<br>Smoking, eating and drinking should be prohibited in the application area.<br>Dispose of rinse water in accordance with local and national regulations. |
| Conditions for safe storage | : | Keep container tightly closed in a dry and well-ventilated place.<br>Containers which are opened must be carefully resealed and kept upright to prevent leakage.<br>Keep in properly labelled containers. |
| Materials to avoid | : | For incompatible materials please refer to Section 10 of this |

SDS.

Recommended storage temperature : 36 - 46 °F / 2 - 8 °C

Further information on storage stability : Stable under normal conditions.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Components with workplace control parameters**

| Components | CAS-No. | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis |
|---|---|---|---|---|
| aluminium hydroxide | 21645-51-2 | TWA (Respirable particulate matter) | 1 mg/m3 (Aluminium) | ACGIH |
| dibenzoyl peroxide | 94-36-0 | TWA | 5 mg/m3 | ACGIH |
| | | TWA | 5 mg/m3 | OSHA Z-1 |
| | | TWA | 5 mg/m3 | NIOSH REL |
| | | TWA | 5 mg/m3 | OSHA P0 |
| silicon dioxide | 7631-86-9 | TWA (Dust) | 20 Million particles per cubic foot (Silica) | OSHA Z-3 |
| | | TWA (Dust) | 80 mg/m3 / %SiO2 (Silica) | OSHA Z-3 |
| | | TWA (Respirable dust) | 0.05 mg/m3 (Silica) | NIOSH REL |
| | | TWA | 6 mg/m3 (Silica) | NIOSH REL |

**Personal protective equipment**

Respiratory protection : General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

Hand protection
Material : butyl-rubber
Material : Ethyl Vinyl Alcohol Laminate (EVAL)
Break through time : > 8 h

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

| | | |
|---|---|---|
| Remarks | : | Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.<br>The suitability for a specific workplace should be discussed with the producers of the protective gloves.<br>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). |
| Eye protection | : | Eye wash bottle with pure water<br>Tightly fitting safety goggles<br>Wear face-shield and protective suit for abnormal processing problems. |
| Skin and body protection | : | Choose body protection according to the amount and concentration of the dangerous substance at the work place. |
| Hygiene measures | : | When using do not eat or drink.<br>When using do not smoke.<br>Wash hands before breaks and at the end of workday. |

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Appearance | : | paste |
| Colour | : | grey |
| 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. |
| Boiling point | : | No data is available on the product itself. |
| Flash point | : | No data is available on the product itself. |
| Evaporation rate | : | No data is available on the product itself. |
| Flammability (solid, gas) | : | No data is available on the product itself. |
| Flammability (liquids) | : | 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 | : | 1.37 - 1.38 g/cm3 (77 °F / 25 °C) |
| Solubility(ies) | | |
| Water solubility | : | immiscible, insoluble |
| 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 | : | Decomposition energy (mass): 260 KJ/kg |
| Self-Accelerating decomposition temperature (SADT) | : | 122 °F / 50 °C |
| Viscosity | | |
| Viscosity, dynamic | : | 60,000 - 80,000 mPa.s (77 °F / 25 °C) |
| Explosive properties | : | No data is available on the product itself. |
| Oxidizing properties | : | No data is available on the product itself. |
| Particle size | : | No data is available on the product itself. |

## SECTION 10. STABILITY AND REACTIVITY

| | | |
|---|---|---|
| Reactivity | : | No dangerous reaction known under conditions of normal use. |
| Chemical stability | : | Stable under normal conditions. |
| Possibility of hazardous reactions | : | Dust may form explosive mixture in air. |
| Conditions to avoid | : | None known. |
| Incompatible materials | : | None known. |
| Hazardous decomposition products | : | aluminium oxide<br>carbon dioxide<br>carbon monoxide<br>Halogenated compounds |

## SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure : No data is available on the product itself.

**Acute toxicity**

**Components:**

aluminium hydroxide**:**
Acute oral toxicityComponents : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 423
Assessment: The substance or mixture has no acute oral toxicity

dibenzoyl peroxide**:**
Acute oral toxicityComponents : LD50 (Mouse, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**
Acute oral toxicityComponents : LD50 (Rat, female): > 2,000 mg/kg
Method: OECD Test Guideline 420
Assessment: The substance or mixture has no acute oral toxicity
Remarks: No mortality observed at this dose.

silicon dioxide**:**
Acute oral toxicityComponents : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401

**Components:**

dibenzoyl peroxide**:**
Acute inhalation toxicity : LC50 (Rat, male): > 24.3 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity

silicon dioxide**:**
Acute inhalation toxicity : LC50 (Rat, male and female): > 58.8 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 403

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

silicon dioxide**:**

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg

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

**Skin corrosion/irritation**

**Components:**

dibenzoyl peroxide**:**
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**
Species: Rabbit
Exposure time: 4 h
Assessment: Irritating to skin.
Method: OECD Test Guideline 404
Result: Irritating to skin.

silicon dioxide**:**
Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: No skin irritation

**Serious eye damage/eye irritation**

**Components:**

dibenzoyl peroxide**:**
Species: Rabbit
Result: Irritating to eyes.
Method: OECD Test Guideline 405

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**
Species: Rabbit
Result: Irritating to eyes.
Assessment: Irritating to eyes.
Method: OECD Test Guideline 405

silicon dioxide**:**
Species: Rabbit
Result: No eye irritation
Assessment: No eye irritation
Method: OECD Test Guideline 405

**Respiratory or skin sensitisation**

**Components:**

dibenzoyl peroxide**:**
Exposure routes: Skin
Species: Mouse
Assessment: May cause sensitisation by skin contact.
Method: OECD Test Guideline 429
Result: Causes sensitisation.

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**
Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: The product is a skin sensitiser, sub-category 1B.

Assessment: No data available

**Germ cell mutagenicity**

**Components:**

dibenzoyl peroxide**:**
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

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**
Genotoxicity in vitro : Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Metabolic activation: without metabolic activation
Result: positive

Test Type: reverse mutation assay
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Result: negative

silicon dioxide**:**
Genotoxicity in vitro : Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative

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

**Components:**

dibenzoyl peroxide**:**

Genotoxicity in vivo : Cell type: Somatic
Application Route: Intraperitoneal injection
Dose: 0, 50, 100, 200 mg/kg b.w.
Method: OECD Test Guideline 474
Result: negative

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**

Genotoxicity in vivo : Test Type: in vivo assay
Species: Mouse (male)
Cell type: Germ
Application Route: Oral
Dose: 3333, 10000 mg/kg
Result: negative

Test Type: gene mutation test
Species: Rat (male)
Cell type: Somatic
Application Route: Oral
Dose: 50,250,500,1000 mg/kg bw/day
Method: OECD Test Guideline 488
Result: negative

silicon dioxide**:**

Genotoxicity in vivo : Application Route: Inhalation
Dose: 50 mg/m3
Result: negative

Germ cell mutagenicity-Assessment : No data available

**Carcinogenicity**

**Components:**

dibenzoyl peroxide**:**
Species: Mouse, male and female
Application Route: Dermal
Exposure time: 104 weeks
Result: negative

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**
Species: Rat, male
Application Route: Oral
Exposure time: 24 month(s)
Dose: 0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment: 7 days/week
NOAEL: 15 mg/kg bw/day

Method: OECD Test Guideline 453
Result: negative
Target Organs: Digestive organs

Species: Mouse, male

Application Route: Dermal
Exposure time: 24 month(s)
Dose: 0, 0.1, 10, 100 mg/kg bw/day
Frequency of Treatment: 3 days/week
NOEL: 0.1 mg/kg body weight

Method: OECD Test Guideline 453
Result: negative
Target Organs: Digestive organs

Species: Rat, female
Application Route: Dermal
Exposure time: 24 month(s)
Dose: 0.1, 100, 1000 mg/kg bw/day
Frequency of Treatment: 5 days/week
NOEL: 100 mg/kg body weight

Method: OECD Test Guideline 453
Result: negative

Species: Rat, female
Application Route: Oral
Exposure time: 24 month(s)
Dose: 0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment: 7 days/week
NOAEL: 100 mg/kg bw/day

Method: OECD Test Guideline 453
Result: negative
Target Organs: Digestive organs

Species: Rat, females
Application Route: Oral
Exposure time: 24 month(s)
Dose: 0, 2, 15, or 100 mg/kg bw/day
Frequency of Treatment: 7 days/week
NOEL: 2 mg/kg bw/day

Method: OECD Test Guideline 453
Result: negative
Target Organs: Digestive organs

silicon dioxide**:**
Species: Rat, male and female
Application Route: Oral
Exposure time: 103 weeks
Dose: 1800 - 3200 mg/kg
Frequency of Treatment: 7 daily
Method: OECD Test Guideline 453
Result: negative

Carcinogenicity - Assessment : No data available

**IARC** Group 1: Carcinogenic to humans
silicon dioxide

(Silica dust, crystalline)

**ACGIH** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** Known to be human carcinogen
silicon dioxide
(Silica, Crystalline (Respirable Size))

**Reproductive toxicity**

**Components:**

dibenzoyl peroxide**:**
Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 0, 250, 500, 1,000 mg/kg b.w/
General Toxicity - Parent: No observed adverse effect level: 500 mg/kg body weight
General Toxicity F1: No observed adverse effect level: 500 mg/kg body weight
Method: OECD Test Guideline 422

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**
Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Dose: 0, 50, 180, 540 or 750 milligram per kilogram
Duration of Single Treatment: 238 d
Frequency of Treatment: 1 daily
General Toxicity - Parent: No-observed-effect level: 540 mg/kg body weight
General Toxicity F1: No-observed-effect level: 750 mg/kg body weight
Symptoms: No adverse effects
Method: OECD Test Guideline 416
Result: No effects on fertility and early embryonic development were detected.

**Components:**

dibenzoyl peroxide**:**
Effects on foetal development : Species: Rat
Dose: 100, 300 or 1000 mg/kg/day
General Toxicity Maternal: No observed adverse effect level: 300 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: 300 mg/kg body weight
Method: OECD Test Guideline 414

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**
Species: Rabbit, female
Application Route: Dermal

Dose: 0, 30, 100 or 300 milligram per kilogram
Duration of Single Treatment: 28 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: No observed adverse effect level: 30 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: 300 mg/kg body weight
Method: Other guidelines
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rabbit, female
Application Route: Oral
Dose: 0, 20, 60 or 180 milligram per kilogram
Duration of Single Treatment: 13 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: No observed adverse effect level: 60 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: 180 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Test Type: Pre-natal
Species: Rat, female
Application Route: Oral
Dose: 0, 60, 180 and 540 milligram per kilogram
Duration of Single Treatment: 10 d
Frequency of Treatment: 1 daily
General Toxicity Maternal: No observed adverse effect level: 180 mg/kg body weight
Developmental Toxicity: No observed adverse effect level: > 540 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

silicon dioxide**:**

Species: Mouse
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 1,340 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rabbit
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 1,600 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

Species: Rat
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 1,350 mg/kg body weight
Method: OECD Test Guideline 414

Result: No teratogenic effects

Reproductive toxicity - Assessment : No data available

**STOT - single exposure**

No data available

**STOT - repeated exposure**

No data available

**Repeated dose toxicity**

**Components:**

dibenzoyl peroxide**:**
Species: Rat, male and female
NOAEL: > 100 mg/kg
Application Route: Skin contact
Number of exposures: 2 years
Method: OECD Test Guideline 451

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane**:**
Species: Rat, male and female
NOAEL: 50 mg/kg
Application Route: oral (gavage)
Exposure time: 14 Weeks
Number of exposures: 7 d
Dose: 0, 50, 250, 1000 mg/kg/day
Method: OECD Test Guideline 408

Species: Rat, male and female
NOAEL: >= 10 mg/kg
Application Route: Skin contact
Exposure time: 13 Weeks
Number of exposures: 5 d
Dose: 0, 10, 100, 1000 mg/kg/day
Method: OECD Test Guideline 411

Species: Mouse, male
NOAEL: 100 mg/kg
Application Route: Skin contact
Exposure time: 13 Weeks
Number of exposures: 3 d
Dose: 0, 1, 10, 100 mg/kg/day
Method: OECD Test Guideline 411

silicon dioxide**:**
Species: Rat, male and female
NOEC: 4000 - 4500 mg/m3
Application Route: Ingestion
Test atmosphere: dust/mist
Exposure time: 13 Weeks

Number of exposures: 7 d
Method: OECD Test Guideline 413

Repeated dose toxicity - Assessment : No data available

**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

**Ecotoxicity**

**Components:**

aluminium hydroxide:
Toxicity to fish : LC50: > 10,000 mg/l
Exposure time: 96 h

dibenzoyl peroxide:
Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.0602 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 203

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 2 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

silicon dioxide:
Toxicity to fish : LL50 (Brachydanio rerio (zebrafish)): > 10,000 mg/l
Exposure time: 96 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

**Components:**

aluminium hydroxide:
Toxicity to daphnia and other aquatic invertebrates : EC50: > 10,000 mg/l
Exposure time: 48 h

dibenzoyl peroxide:
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.11 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:
Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 1.8 mg/l
Exposure time: 48 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

silicon dioxide:
Toxicity to daphnia and other aquatic invertebrates : EL50 (Daphnia magna (Water flea)): >= 1,000 mg/l
Exposure time: 24 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 202

**Components:**

dibenzoyl peroxide:
Toxicity to algae/aquatic plants : EbC50 (Selenastrum capricornutum (green algae)): 0.0422 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:
Toxicity to algae/aquatic plants : EC50: 11 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: EPA-660/3-75-009

NOEC: 4.2 mg/l
Exposure time: 72 h

Test Type: static test
Test substance: Fresh water
Method: EPA-660/3-75-009

silicon dioxide:
Toxicity to algae/aquatic plants : EL50 (Desmodesmus subspicatus (green algae)): > 10,000 mg/l
Exposure time: 72 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 201

**Components:**

dibenzoyl peroxide:
M-Factor (Acute aquatic toxicity) : 10
Toxicity to fish (Chronic toxicity) : No data available

**Components:**

dibenzoyl peroxide:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (Daphnia magna (Water flea)): 0.001 mg/l
Exposure time: 21 d
Test Type: semi-static test
Method: OECD Test Guideline 211

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.3 mg/l
Exposure time: 21 d
Test Type: semi-static test
Test substance: Fresh water
Method: OECD Test Guideline 211

**Components:**

dibenzoyl peroxide:
M-Factor (Chronic aquatic toxicity) : 10

**Components:**

dibenzoyl peroxide:
Toxicity to microorganisms : EC50 (activated sludge): 35 mg/l
Exposure time: 0.5 h
Test Type: static test
Test substance: Fresh water
Method: OECD Test Guideline 209

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:
Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water

Toxicity to soil dwelling organisms : No data available

| | | |
|---|---|---|
| Plant toxicity | : | No data available |
| Sediment toxicity | : | No data available |
| Toxicity to terrestrial organisms | : | No data available |

Ecotoxicology Assessment

| | | |
|---|---|---|
| Acute aquatic toxicity | : | No data available |

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

| | | |
|---|---|---|
| Chronic aquatic toxicity | : | Toxic to aquatic life with long lasting effects. |
| Toxicity Data on Soil | : | No data available |
| Other organisms relevant to the environment | : | No data available |

**Persistence and degradability**

**Components:**

dibenzoyl peroxide:

| | | |
|---|---|---|
| Biodegradability | : | Inoculum: activated sludge<br>Concentration: 4 mg/l<br>Result: Readily biodegradable.<br>Biodegradation: 68 %<br>Exposure time: 28 d<br>Method: OECD Test Guideline 301D |

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

| | | |
|---|---|---|
| Biodegradability | : | Test Type: aerobic<br>Inoculum: activated sludge, non-adapted<br>Concentration: 20 mg/l<br>Result: Not readily biodegradable.<br>Biodegradation: 5 %<br>Exposure time: 28 d<br>Method: OECD Test Guideline 301F |
| Biochemical Oxygen Demand (BOD) | : | No data available |
| Chemical Oxygen Demand (COD) | : | No data available |
| BOD/COD | : | No data available |
| ThOD | : | No data available |
| BOD/ThOD | : | No data available |
| Dissolved organic carbon (DOC) | : | No data available |

Physico-chemical removability : No data available

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Stability in water : Degradation half life(DT50): 4.83 d (77 °F / 25 °C) pH: 4
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life(DT50): 7.1 d (77 °F / 25 °C) pH: 9
Method: OECD Test Guideline 111
Remarks: Fresh water

Degradation half life(DT50): 3.58 d (77 °F / 25 °C) pH: 7
Method: OECD Test Guideline 111
Remarks: Fresh water

Photodegradation : No data available

Impact on Sewage Treatment : No data available

**Bioaccumulative potential**

**Components:**

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Bioaccumulation : Bioconcentration factor (BCF): 31
Remarks: Does not bioaccumulate.

**Components:**

dibenzoyl peroxide:

Partition coefficient: n-octanol/water : log Pow: 3.2 (72 °F / 22 °C)
pH: 7.02
Method: OECD Test Guideline 117

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Partition coefficient: n-octanol/water : log Pow: 3.242 (77 °F / 25 °C)
pH: 7.1
Method: OECD Test Guideline 117

**Mobility in soil**

Mobility : No data available

**Components:**

dibenzoyl peroxide:

Distribution among environmental compartments : Koc: 6309.57
Method: OECD Test Guideline 121

2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane:

Distribution among environmental compartments : Koc: 445

Stability in soil : No data available

**Other adverse effects**

| | | |
|---|---|---|
| Environmental fate and pathways | : | No data available |
| Results of PBT and vPvB assessment | : | No data available |
| Endocrine disrupting potential | : | No data available |
| Adsorbed organic bound halogens (AOX) | : | No data available |

**Hazardous to the ozone layer**

| | | |
|---|---|---|
| Ozone-Depletion Potential | : | Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances<br>Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B). |
| Additional ecological information - Product | : | An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.<br>Very toxic to aquatic life with long lasting effects. |
| Global warming potential (GWP) | : | No data available |

## SECTION 13. DISPOSAL CONSIDERATIONS

**Disposal methods**

| | | |
|---|---|---|
| Waste from residues | : | The product should not be allowed to enter drains, water courses or the soil.<br>Do not contaminate ponds, waterways or ditches with chemical or used container.<br>Send to a licensed waste management company.<br>Dispose of as hazardous waste in compliance with local and national regulations.<br>Dispose of contents/ container to an approved waste disposal plant. |
| Contaminated packaging | : | Empty remaining contents.<br>Dispose of as unused product.<br>Do not re-use empty containers. |

## SECTION 14. TRANSPORT INFORMATION

**International Regulations**

**IATA**

| | | |
|---|---|---|
| UN/ID No. | : | UN 3077 |
| Proper shipping name | : | Environmentally hazardous substance, solid, n.o.s. (DIBENZOYL PEROXIDE) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | Miscellaneous |
| Packing instruction (cargo aircraft) | : | 956 |
| Packing instruction (passenger aircraft) | : | 956 |
| Environmentally hazardous | : | yes |

**IMDG**

| | | |
|---|---|---|
| UN number | : | UN 3077 |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DIBENZOYL PEROXIDE) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | 9 |
| EmS Code | : | F-A, S-F |
| Marine pollutant | : | yes |

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

Not applicable for product as supplied.

**National Regulations**

**DOT Classification**

| | | |
|---|---|---|
| UN/ID/NA number | : | UN 3077 |
| Proper shipping name | : | ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (DIBENZOYL PEROXIDE) |
| Class | : | 9 |
| Packing group | : | III |
| Labels | : | CLASS 9 |
| ERG Code | : | 171 |
| Marine pollutant | : | yes(DIBENZOYL PEROXIDE) |
| Remarks | : | Shipment by ground under DOT is non-regulated; however it may be shipped per the applicable hazard classification to facilitate multi-modal transport involving ICAO (IATA) or IMO. |

**Special precautions for user**

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

## SECTION 15. REGULATORY INFORMATION

**CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

**SARA 311/312 Hazards** : Respiratory or skin sensitisation
Skin corrosion or irritation
Serious eye damage or eye irritation

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

| | | |
|---|---|---|
| dibenzoyl peroxide | 94-36-0 | >= 10 - < 20 % |

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

**California Prop. 65**

WARNING: This product can expose you to chemicals including silicon dioxide, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.

**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 | : | On the inventory, or 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 | : | On the inventory, or in compliance with the inventory |
| TCSI | : | On the inventory, or in compliance with the inventory |
| TSCA | : | On or in compliance with the active portion of the TSCA inventory |

**Inventories**

AICS (Australia), AIIC (Australia), DSL (Canada), IECSC (China), REACH (European Union), ENCS (Japan), ISHL (Japan), KECI (Korea), NZIoC (New Zealand), PICCS (Philippines), TCSI (Taiwan), TSCA (USA)

**TSCA - 5(a) Significant New Use Rule List of Chemicals**

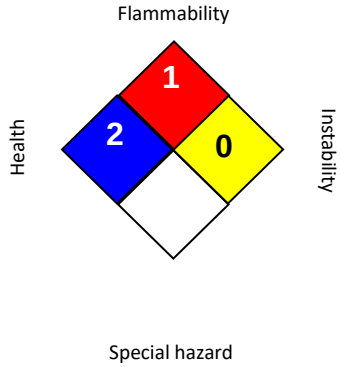
No substances are subject to a Significant New Use Rule.

**US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)**
No substances are subject to TSCA 12(b) export notification requirements.

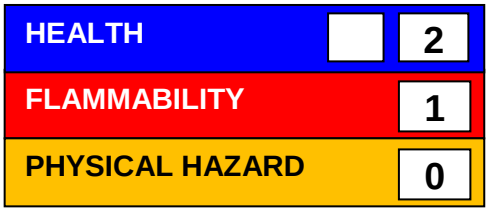
## SECTION 16. OTHER INFORMATION

**Further information**

**NFPA 704:**




**HMIS® IV:**




HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard

| | | |
|---|---|---|
| Revision Date | : | 11/30/2020 |
| ACGIH | : | USA. ACGIH Threshold Limit Values (TLV) |
| NIOSH REL | : | USA. NIOSH Recommended Exposure Limits |
| OSHA P0 | : | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000 |
| OSHA Z-1 | : | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants |
| OSHA Z-3 | : | USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts |
| ACGIH / TWA | : | 8-hour, time-weighted average |
| NIOSH REL / TWA | : | Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek |
| OSHA P0 / TWA | : | 8-hour time weighted average |
| OSHA Z-1 / TWA | : | 8-hour time weighted average |
| OSHA Z-3 / TWA | : | 8-hour time weighted average |

The information and recommendations in this publication are to the best of our knowledge, information and belief accurate at the date of publication, NOTHING HEREIN IS TO BE CONSTRUED AS A WARRANTY, EXPRESS OR OTHERWISE.

IN ALL CASES, IT IS THE RESPONSIBILITY OF THE USER TO DETERMINE THE APPLICABILITY OF SUCH INFORMATION AND RECOMMENDATIONS AND THE SUITABILITY OF ANY PRODUCT FOR ITS OWN PARTICULAR PURPOSE.

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.