

ARALDITE® 2051 RESIN

Version 1.0 Revision Date: 04/23/2021 SDS Number: 400000011295 Date of last issue: -
Date of first issue: 04/23/2021

Print Date 12/12/2023

SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2051 RESIN

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 : Adhesives

SECTION 2. HAZARDS IDENTIFICATION**GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Flammable liquids : Category 2
Skin corrosion : Category 1B
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 3
Chronic aquatic toxicity : Category 3

GHS label elementsHazard pictograms : 

Signal word : Danger

Hazard statements : H225 Highly flammable liquid and vapour.

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H314 Causes severe skin burns and eye damage.
 H317 May cause an allergic skin reaction.
 H335 May cause respiratory irritation.
 H412 Harmful to aquatic life with long lasting effects.

Precautionary statements

: **Prevention:**

P210 Keep away from heat/ sparks/ open flames/ hot surfaces.
 No smoking.
 P233 Keep container tightly closed.
 P240 Ground/bond container and receiving equipment.
 P241 Use explosion-proof electrical/ ventilating/ lighting
 equipment.
 P242 Use only non-sparking tools.
 P243 Take precautionary measures against static discharge.
 P261 Avoid breathing mist or vapours.
 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/ protective clothing/ eye protection/
 face protection.

Response:

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT
 induce vomiting.
 P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately
 all contaminated clothing. Rinse skin with water/ shower.
 P304 + P340 + P310 IF INHALED: Remove person to fresh air
 and keep comfortable for breathing. Immediately call a POISON
 CENTER/ doctor.
 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.
 P363 Wash contaminated clothing 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

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Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
methyl methacrylate	80-62-6	50 - 70
methacrylic acid	79-41-4	5 - 10
2,6-di-tert-butyl-p-cresol	128-37-0	1 - 5
2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate	52628-03-2	1 - 5
Silicon, amorphous	7631-86-9	1 - 5
Talc (Mg ₃ H ₂ (SiO ₃) ₄)	14807-96-6	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.
 Consult a physician.
 Show this safety data sheet to the doctor in attendance.
 Treat symptomatically.
 Get medical attention if symptoms occur.
- If inhaled : If inhaled, remove to fresh air.
 Get medical attention if symptoms occur.
- In case of skin contact : Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
 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.
 Keep eye wide open while rinsing.
 If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
 Do NOT induce vomiting.
 Never give anything by mouth to an unconscious person.
 If symptoms persist, call a physician.
 Take victim immediately to hospital.
- Most important symptoms and effects, both acute and delayed : None known.

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- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing. 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
Sulphur oxides
Hydrogen chloride
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- 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.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Refer to protective measures listed in sections 7 and 8.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

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- 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).

SECTION 7. HANDLING AND STORAGE

- 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.
- Advice on safe handling : Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons.
Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.
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.
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.
- Conditions for safe storage : No smoking.
Keep container tightly closed in a dry and well-ventilated place.
Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Observe label precautions.
Keep in properly labelled containers.
- 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.

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
methyl methacrylate	80-62-6	TWA	50 ppm	ACGIH
		STEL	100 ppm	ACGIH
		TWA	100 ppm 410 mg/m3	OSHA Z-1
		TWA	100 ppm 410 mg/m3	NIOSH REL
		TWA	100 ppm 410 mg/m3	OSHA P0
methacrylic acid	79-41-4	TWA	20 ppm	ACGIH
		TWA	20 ppm 70 mg/m3	NIOSH REL
		TWA	20 ppm 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
Silicon, amorphous	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	6 mg/m3 (Silica)	NIOSH REL
Talc (Mg3H2(SiO3)4)	14807-96-6	TWA (Dust)	20 Million particles per cubic foot	OSHA Z-3
		TWA (Respirable)	2 mg/m3	NIOSH REL
		TWA	0.1 fibres per cubic centimeter	ACGIH
		TWA (Respirable particulate matter)	2 mg/m3	ACGIH
		TWA (respirable dust fraction)	2 mg/m3	OSHA P0

Personal protective equipment

Hand protection

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- 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 : like methacrylic acid
- 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 : 50 °F / 10 °C
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.

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

Density : 1.02 - 1.05 g/cm³

Solubility(ies)
Water solubility : 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.

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 : 40 - 70 Pas

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
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

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Method: Calculation method

Acute inhalation toxicity - Product : Acute toxicity estimate: 39.02 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : 4,111 mg/kg
Method: Calculation method

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

Skin corrosion/irritation**Product:**

Method: OECD Test Guideline 431

Result: Causes burns.

GLP: yes

Serious eye damage/eye irritation**Components:**

methacrylic acid:

Species: Rabbit

Result: Irreversible effects on the eye

Assessment: Risk of serious damage to eyes.

Method: Draize Test

GLP: no

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

Species: Rabbit

Result: No eye irritation

Assessment: No eye irritation

Method: OECD Test Guideline 405

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

Result: Corrosive

Silicon, amorphous:

Species: Rabbit

Result: No eye irritation

Assessment: No eye irritation

Method: OECD Test Guideline 405

Respiratory or skin sensitisation**Components:**

methyl methacrylate:

Exposure routes: Skin

Species: Mouse

Assessment: May cause sensitisation by skin contact.

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Method: OECD Test Guideline 429
 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.

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

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:
 Test Type: Local lymph node assay (LLNA)
 Species: Mouse
 Method: OECD Test Guideline 429
 Result: The product is a skin sensitiser, sub-category 1B.
 GLP: yes

Assessment: No data available

Germ cell mutagenicity**Components:**

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

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

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

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:
 Genotoxicity in vitro : Test Type: Ames test
 Test system: Salmonella typhimurium and E. coli
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 Result: negative

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GLP: yes

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

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

Silicon, amorphous:
 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:

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

2,6-di-tert-butyl-p-cresol:
 Genotoxicity in vivo

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

Application Route: Oral

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

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

Germ cell mutagenicity-
Assessment : No data available

Carcinogenicity**Components:**

methyl methacrylate:
Species: Rat, male and female
Application Route: Oral
Exposure time: 2 Years
Dose: 6, 60, 2000 ppm
Frequency of Treatment: once daily
NOAEL: 90.3 mg/kg bw/day

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

Silicon, amorphous:
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

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Carcinogenicity - Assessment : No data available

IARC Group 1: Carcinogenic to humans
Talc (Mg₃H₂(SiO₃)₄)

ACGIH Confirmed human carcinogen

Talc (Mg₃H₂(SiO₃)₄)

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
Talc (Mg₃H₂(SiO₃)₄)
(Silica, Crystalline (Respirable Size))

Reproductive toxicity**Components:**

methacrylic acid:
Effects on fertility : 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

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

Components:

methyl methacrylate:
Effects on foetal development : Species: Rat
Application Route: Inhalation
Dose: 99, 304, 1178 ppm
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

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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.

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

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

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

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

Silicon, amorphous:

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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**Components:**

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

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:**

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

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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

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

Species: Pig, male and female
NOAEL: >= 61 mg/kg
Application Route: oral (feed)
Exposure time: daily
Method: Chronic toxicity

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

Species: Rat, male and female
NOEL: 100 mg/kg
Application Route: oral (gavage)
Exposure time: 28 d
Number of exposures: 7 days/week
Dose: 0, 100, 300, or 1000 MKD
Method: OECD Test Guideline 407
GLP: yes
Target Organs: Kidney, Stomach

Silicon, amorphous:

Species: Rat, male and female
NOAEL: 7950 - 8980 mg/kg
Application Route: Ingestion
Exposure time: 4,320 h
Number of exposures: 7 d
Method: Subchronic toxicity

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 - : No data available
Assessment

Aspiration toxicity

No data available

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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**Ecotoxicity****Components:**

methyl methacrylate:

Toxicity to fish

: LC50: 191 mg/l
Exposure time: 96 hLC50 (Oncorhynchus mykiss (rainbow trout)): > 79 mg/l
Exposure time: 96 h
Test Type: flow-through test
Method: Fish Early-life Stage Toxicity Test

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.

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

Toxicity to fish

: LC50 (Fish): 0.199 mg/l
Exposure time: 96 h

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Test substance: Fresh water
 Method: QSAR

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:
 Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 112 mg/l
 Exposure time: 96 h
 Test Type: static test
 Analytical monitoring: yes
 Method: OECD Test Guideline 203
 GLP: yes

Silicon, amorphous:
 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

Talc (Mg₃H₂(SiO₃)₄):
 Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l
 Exposure time: 24 h

Components:

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

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

2,6-di-tert-butyl-p-cresol:
 Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 0.48 mg/l
 aquatic invertebrates End point: Immobilization
 Exposure time: 48 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 202

2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, phosphate:
 Toxicity to daphnia and other : LC50 (Daphnia magna (Water flea)): 68 mg/l
 aquatic invertebrates Exposure time: 48 h
 Test Type: static test
 Analytical monitoring: yes
 Method: OECD Test Guideline 202
 GLP: yes

Silicon, amorphous:
 Toxicity to daphnia and other : EL50 (Daphnia magna (Water flea)): >= 1,000 mg/l

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aquatic invertebrates
 Exposure time: 24 h
 Test Type: static test
 Test substance: Fresh water
 Method: OECD Test Guideline 202

Components:

methyl methacrylate:
 Toxicity to algae/aquatic
 plants

: EC50: > 110 mg/l
 Exposure time: 72 h

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

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

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

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

Toxicity to algae/aquatic
 plants

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

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

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Silicon, amorphous:
 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

M-Factor (Acute aquatic toxicity) : No data available

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

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

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

Components:

methyl methacrylate:
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 37 mg/l
 Exposure time: 21 d
 Test Type: flow-through test
 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

2,6-di-tert-butyl-p-cresol:
 Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC50 (Daphnia magna (Water flea)): 0.096 mg/l
 Exposure time: 21 d
 Test substance: Fresh water
 Method: OECD Test Guideline 211

NOEC (Daphnia magna (Water flea)): 0.069 mg/l

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Exposure time: 21 d
 Test substance: Fresh water
 Method: OECD Test Guideline 211

Components:

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

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
 Acute aquatic toxicity : No data available

Chronic aquatic toxicity : No data available

Toxicity Data on Soil : No data available

Other organisms relevant to
 the environment : No data available

Persistence and degradability**Components:**

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

methacrylic acid:
 Biodegradability : Test Type: aerobic
 Inoculum: activated sludge

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

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

: Result: Not biodegradable

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

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

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

Stability in water

: No data available

Photodegradation

: No data available

Impact on Sewage
 Treatment

: No data available

Bioaccumulative potential**Components:**

methyl methacrylate:
 Bioaccumulation

: Bioconcentration factor (BCF): 3

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

: Species: Cyprinus carpio (Carp)
 Bioconcentration factor (BCF): 330 - 1,800
 Exposure time: 28 d

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Method: flow-through test

Components:

methyl methacrylate:
Partition coefficient: n-octanol/water : log Pow: 1.38

methacrylic acid:
Partition coefficient: n-octanol/water : log Pow: 0.93 (72 °F / 22 °C)
pH: 2.2

2,6-di-tert-butyl-p-cresol:
Partition coefficient: n-octanol/water : log Pow: 5.2

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
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.
Harmful to aquatic life with long lasting effects.

Global warming potential (GWP) : No data available

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SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

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

SECTION 14. TRANSPORT INFORMATION**International Regulations****IATA**

- UN/ID No. : UN 2924
Proper shipping name : Flammable liquid, corrosive, n.o.s.
(METHYL METHACRYLATE, METHACRYLIC ACID)
Class : 3
Subsidiary risk : 8
Packing group : II
Labels : Flammable Liquids, Corrosive
Packing instruction (cargo aircraft) : 363
Packing instruction (passenger aircraft) : 352

IMDG

- UN number : UN 2924
Proper shipping name : FLAMMABLE LIQUID, CORROSIVE, N.O.S.
(METHYL METHACRYLATE, METHACRYLIC ACID)
Class : 3
Subsidiary risk : 8
Packing group : II
Labels : 3 (8)
EmS Code : F-E, S-C
Marine pollutant : no

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

Not applicable for product as supplied.

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National Regulations**DOT Classification**

UN/ID/NA number : UN 2924
 Proper shipping name : FLAMMABLE LIQUIDS, CORROSIVE, N.O.S.
 (METHYL METHACRYLATE, METHACRYLIC ACID)
 Class : 3
 Subsidiary risk : 8
 Packing group : II
 Labels : FLAMMABLE LIQUID, CORROSIVE
 ERG Code : 132
 Marine pollutant : no

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)
alpha,alpha-dimethylbenzyl hydroperoxide	80-15-9	10	1388
methyl methacrylate	80-62-6	1000	1767
1,1,2-trichloroethane	79-00-5	100	*
hydroquinone	123-31-9	100	*
p-cresol	106-44-5	100	*
cumene	98-82-8	5000	*
acetophenone	98-86-2	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 : The following components are subject to reporting levels established by SARA Title III, Section 313:

methyl methacrylate 80-62-6 >= 50 - < 70 %

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

methyl methacrylate 80-62-6

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California Prop. 65

WARNING: This product can expose you to chemicals including Talc ($Mg_3H_2(SiO_3)_4$), 1,1,2-trichloroethane, cumene, 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	: All components of this product are on the Canadian DSL
AIIC	: On the inventory, or in compliance with the inventory
NZIoC	: Not in compliance with the inventory
ENCS	: On the inventory, or in compliance with the inventory
KECI	: On the inventory, or in compliance with the inventory
PICCS	: On the inventory, or 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

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.

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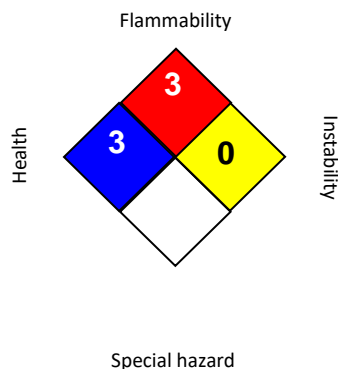
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SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH	3
FLAMMABILITY	3
PHYSICAL HAZARD	0

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

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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
 ACGIH / STEL : Short-term exposure limit
 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.

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

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NO PERSON OR ORGANIZATION EXCEPT A DULY AUTHORIZED HUNTSMAN EMPLOYEE IS AUTHORIZED TO PROVIDE OR MAKE AVAILABLE DATA SHEETS FOR HUNTSMAN PRODUCTS. DATA SHEETS FROM UNAUTHORIZED SOURCES MAY CONTAIN INFORMATION THAT IS NO LONGER CURRENT OR ACCURATE.

ARALDITE® 2051 HARDENER

Version 1.4 Revision Date: 07/25/2022 SDS Number: 400000001213 Date of last issue: 09/07/2021
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SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2051 HARDENER

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 : 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 : Adhesives

SECTION 2. HAZARDS IDENTIFICATION**GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

Flammable liquids : Category 2

Skin irritation : Category 2

Skin sensitisation : Category 1

Specific target organ toxicity
- single exposure : Category 3 (Respiratory system)Short-term (acute) aquatic
hazard : Category 3**GHS label elements**

Hazard pictograms :



Signal word : Danger

Hazard statements : H225 Highly flammable liquid and vapour.
H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H335 May cause respiratory irritation.
H402 Harmful to aquatic life.

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Precautionary statements : **Prevention:**
P210 Keep away from heat/ sparks/ open flames/ hot surfaces.
No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing mist or vapours.
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:
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
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)
methyl methacrylate	80-62-6	70 - 90
3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine	34562-31-7	5 - 10
2,6-di-tert-butyl-p-cresol	128-37-0	0.1 - 1

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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.
Show this safety data sheet to the doctor in attendance.
Treat symptomatically.
Get medical attention if symptoms occur.
- If inhaled : If inhaled, remove to fresh air.
Get medical attention if symptoms occur.
- In case of skin contact : If skin irritation persists, call a physician.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear.
Never give anything by mouth to an unconscious person.
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
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

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- 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 : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- 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.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Refer to protective measures listed in sections 7 and 8.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
- 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).

SECTION 7. HANDLING AND STORAGE

- 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.

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- Advice on safe handling : Repeated or prolonged skin contact may cause skin irritation and/or dermatitis and sensitisation of susceptible persons. Persons suffering from asthma, eczema or skin problems should avoid contact, including dermal contact, with this product.
 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.
 Open drum carefully as content may be under pressure.
 Dispose of rinse water in accordance with local and national regulations.
- Conditions for safe storage : No smoking.
 Keep container tightly closed in a dry and well-ventilated place.
 Containers which are opened must be carefully resealed and kept upright to prevent leakage.
 Observe label precautions.
 Keep in properly labelled containers.
- 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
methyl methacrylate	80-62-6	TWA	50 ppm	ACGIH
		STEL	100 ppm	ACGIH
		TWA	100 ppm 410 mg/m ³	OSHA Z-1
		TWA	100 ppm 410 mg/m ³	NIOSH REL
		TWA	100 ppm 410 mg/m ³	OSHA P0
2,6-di-tert-butyl-p-cresol	128-37-0	TWA (Inhalable fraction and vapor)	2 mg/m ³	ACGIH

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		TWA	10 mg/m ³	NIOSH REL
		TWA	10 mg/m ³	OSHA P0

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 : 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).
 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

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 : yellow
 Odour : acrylic-like

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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/boiling range : > 212 °F / > 100 °C
Method: estimated

Flash point : 50 °F / 10 °C

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 : 0.94 - 0.95 g/cm³ (73 °F / 23 °C)

Solubility(ies)
Water solubility : 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 : No data is available on the product itself.

Self-Accelerating decomposition temperature (SADT) : No data is available on the product itself.

Viscosity
Viscosity, dynamic : 30,000 - 55,000 mPa.s (68 °F / 20 °C)
thixotropic

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

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

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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
carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION**Acute toxicity****Product:**

Acute oral toxicity : Acute toxicity estimate: > 5,000 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: 42 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Components:**methyl methacrylate:**

Acute oral toxicity : LD50 (Rat): 7,900 - 9,400 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): 29.8 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Directive 67/548/EEC, Annex V, B.2.

Acute dermal toxicity : LD50 (Rabbit, male): > 5,000 mg/kg
Method: OECD Test Guideline 402

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

Acute oral toxicity : LD50 (Rat, male and female): > 500 mg/kg
GLP: yes
Assessment: The component/mixture is moderately toxic after single ingestion.

Acute dermal toxicity : LD50 (Rabbit, male and female): > 1,000 mg/kg
GLP: yes
Assessment: The substance or mixture has no acute dermal

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toxicity

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

Acute oral toxicity : LD50 (Rat, male and female): > 6,000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

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

Skin corrosion/irritation**Components:****methyl methacrylate:**

Species : Rabbit
Method : OPPTS 870.2500
Result : Skin irritation

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

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

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

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

Serious eye damage/eye irritation**Components:****3,5-diethyl-1,2-dihydro-1-phenyl-2-propylpyridine:**

Species : Rabbit
Result : Mild eye irritation
Method : OECD Test Guideline 405
GLP : yes

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

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

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Respiratory or skin sensitisation**Components:****methyl methacrylate:**

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

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

Test Type : Local lymph node assay (LLNA)
Species : Mouse
Assessment : Did not cause sensitisation on laboratory animals.
Method : OECD Test Guideline 429
Result : Did not cause sensitisation on laboratory animals.
GLP : yes

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

Exposure routes : Skin
Species : Humans
Result : Does not cause skin sensitisation.

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

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

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

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

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

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

Carcinogenicity**Components:****methyl methacrylate:**

Species : Rat, male and female
Application Route : Oral
Exposure time : 2 Years
Dose : 6, 60, 2000 ppm
Frequency of Treatment : once daily
NOAEL : 90.3 mg/kg bw/day
Result : negative

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

Species : Rat, male and female
Application Route : Oral
Result : negative

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.

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:****methyl methacrylate:**

Effects on foetal development : Species: Rat
Application Route: Inhalation
Dose: 99, 304, 1178 ppm
Teratogenicity: NOAEC F1: 8,300 mg/m³
Embryo-foetal toxicity: NOAEC F1: 8,300 mg/m³
Method: OECD Test Guideline 414
Result: No teratogenic effects

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

Effects on fertility : Test Type: Two-generation study
Species: Rat, male and female
Application Route: Oral
Dose: 25/100/500 mg/kg bw/day
General Toxicity - Parent: NOAEL: 100 mg/kg body weight
General Toxicity F1: NOAEL: 25 mg/kg body weight
Result: negative

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Effects on foetal development : Test Type: Pre-natal
Species: Mouse, female
Application Route: Oral
Duration of Single Treatment: 7 d
General Toxicity Maternal: NOAEL: 240 mg/kg body weight
Developmental Toxicity: NOAEL: 800 mg/kg body weight
Target Organs: spleen, Kidney

STOT - single exposure**Components:****methyl methacrylate:**

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

STOT - repeated exposure

No data available

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

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

Aspiration toxicity

No data available

Experience with human exposure

No data available

Toxicology, Metabolism, Distribution

No data available

Neurological effects

No data available

Further information**Product:**

Remarks : Solvents may degrease the skin.

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SECTION 12. ECOLOGICAL INFORMATION
Ecotoxicity
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: Fish Early-life Stage Toxicity Test

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

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

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

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

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

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

NOEC (Pseudokirchneriella subcapitata (green algae)): 16 mg/l
 Exposure time: 72 h
 Test Type: static test
 Analytical monitoring: yes
 Method: OECD Test Guideline 201
 GLP: yes

Ecotoxicology Assessment

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

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

Toxicity to fish : LC50 (Fish): 0.199 mg/l
 Exposure time: 96 h

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		Test substance: Fresh water Method: QSAR
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 0.48 mg/l End point: Immobilization Exposure time: 48 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): > 0.24 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201
		NOEC (Pseudokirchneriella subcapitata (green algae)): 0.24 mg/l Exposure time: 72 h Test Type: static test Test substance: Fresh water Method: OECD Test Guideline 201
M-Factor (Acute aquatic toxicity)	:	1
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
		NOEC (Fish): >= 23.8 mg/l Exposure time: 70 d Test substance: Fresh water
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	EC50 (Daphnia magna (Water flea)): 0.096 mg/l Exposure time: 21 d Test substance: Fresh water Method: OECD Test Guideline 211
		NOEC (Daphnia magna (Water flea)): 0.069 mg/l Exposure time: 21 d Test substance: Fresh water Method: OECD Test Guideline 211
M-Factor (Chronic aquatic toxicity)	:	1
Toxicity to microorganisms	:	ErC50 (activated sludge): 1.7 mg/l Exposure time: 24 h Test Type: static test

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Persistence and degradability**Components:****methyl methacrylate:**

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

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

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

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

Biodegradability : Result: Not biodegradable

Bioaccumulative potential**Components:****methyl methacrylate:**

Bioaccumulation : Bioconcentration factor (BCF): 3

Partition coefficient: n-octanol/water : log Pow: 1.38

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

Partition coefficient: n-octanol/water : log Pow: > 6.5 (77 °F / 25 °C)
pH: 5.7
Method: OECD Test Guideline 117
GLP: yes

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

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

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

Mobility in soil**Components:****2,6-di-tert-butyl-p-cresol:**

Distribution among environmental compartments : Koc: 8183

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Other adverse effects**Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82
Protection of Stratospheric Ozone - CAA Section 602 Class I
Substances

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

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

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

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

SECTION 14. TRANSPORT INFORMATION**International Regulations****IATA-DGR**

UN/ID No. : UN 1133
Proper shipping name : Adhesives
Class : 3
Packing group : II
Labels : Flammable Liquids
Packing instruction (cargo
aircraft) : 364
Packing instruction
(passenger aircraft) : 353

IMDG-Code

UN number : UN 1133
Proper shipping name : ADHESIVES

Class : 3
Packing group : II

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Labels : 3
 EmS Code : F-E, S-D
 Marine pollutant : no

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

Not applicable for product as supplied.

National Regulations**49 CFR**

UN/ID/NA number : UN 1133
 Proper shipping name : Adhesives

Class : 3
 Packing group : II
 Labels : FLAMMABLE LIQUID
 ERG Code : 128
 Marine pollutant : no

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)
methyl methacrylate	80-62-6	1000	1409

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

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

methyl methacrylate 80-62-6 >= 70 - < 90 %

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

methyl methacrylate 80-62-6

California Prop. 65

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

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

DSL : All components of this product are on the Canadian DSL

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- AIIC : On the inventory, or in compliance with the inventory
- NZIoC : Not in compliance with the inventory
- ENCS : Notified. Allowed to be imported / manufactured only by the notifiers. Please contact your Huntsman sales representative for more information.
- KECI : On the inventory, or in compliance with the inventory
- PICCS : On the inventory, or 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

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

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

No substances are subject to a Significant New Use Rule.

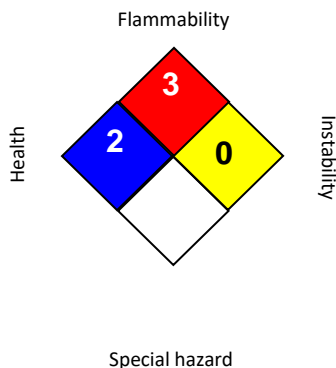
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

No substances are subject to TSCA 12(b) export notification requirements.

SECTION 16. OTHER INFORMATION

Further information

NFPA 704:



HMIS® IV:

HEALTH		2
FLAMMABILITY		3
PHYSICAL HAZARD		0

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

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ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL	:	USA. NIOSH Recommended Exposure Limits
OSHA P0	:	USA. Table Z-1-A Limits for Air Contaminants (1989 vacated values)
OSHA Z-1	:	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
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

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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.

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