

ARALDITE® 2023-60 RESIN

Version 1.1 Revision Date: 07/19/2021 SDS Number: 400000007161 Date of last issue: 09/27/2019
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800.220.1966

410 Pike Road • Huntingdon Valley, PA 19006

SECTION 1. IDENTIFICATION

Product name : ARALDITE® 2023-60 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 : Resin

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

Eye irritation : Category 2A

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.

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H319 Causes serious eye irritation.
 H335 May cause respiratory irritation.
 H402 Harmful to aquatic life.

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 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:

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.
 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.
 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)
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methyl methacrylate	80-62-6	30 - 50
titanium dioxide	13463-67-7	5 - 10
silica, amorphous, fumed, crystalline free	7631-86-9	1 - 5
octadecyl methacrylate	32360-05-7	1 - 5
methacrylic acid	79-41-4	1 - 2.5
hexadecyl methacrylate	2495-27-4	1 - 5
2,2'-phenyliminodiethanol	120-07-0	0.25 - 1
Talc (Mg ₃ H ₂ (SiO ₃) ₄)	14807-96-6	0.1 - 1
2,6-di-tert-butyl-p-cresol	128-37-0	0.1 - 0.25

SECTION 4. FIRST AID MEASURES

- General advice : 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 : Get medical attention if irritation develops and persists.
- In case of eye contact : Flush eyes with water as a precaution.
Remove contact lenses.
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.
- Notes to physician : Treat symptomatically.

SECTION 5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Unsuitable extinguishing media : High volume water jet
- Specific hazards during firefighting : No information available.
- Hazardous combustion : Carbon oxides

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products Metal oxides

Specific extinguishing methods : Standard procedure for chemical fires.

Further information : No action shall be taken involving any personal risk or without suitable training.

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 : Refer to protective measures listed in sections 7 and 8.

Environmental precautions : No special environmental precautions required.

Methods and materials for containment and cleaning up : Wipe up with absorbent material (e.g. cloth, fleece).
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on protection against fire and explosion : Normal measures for preventive fire protection.

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.

Conditions for safe storage : No special storage conditions required.
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

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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
titanium dioxide	13463-67-7	TWA (total dust)	15 mg/m3	OSHA Z-1
		TWA	10 mg/m3 (Titanium dioxide)	ACGIH
		TWA (Total dust)	10 mg/m3	OSHA P0
silica, amorphous, fumed, crystalline free	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
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

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

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Break through time	: 10 - 480 min
Remarks	: The suitability for a specific workplace should be discussed with the producers of the protective gloves. 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	: Tightly fitting safety goggles
Skin and body protection	: Choose body protection according to the amount and concentration of the dangerous substance at the work place.
Hygiene measures	: General industrial hygiene practice.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	: liquid
Colour	: white
Odour	: No data is available on the product itself.
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. : > 212 °F / > 100 °C
Flash point	: 50 °F / 10 °C Method: Information given is based on data obtained from similar substances., closed cup
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.

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Density : 1.07 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 : > 752 °F / > 400 °C

Decomposition temperature : > 392 °F / > 200 °C

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

Viscosity
Viscosity, dynamic : 180,000 - 200,000 mPa.s

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 : No hazards to be specially mentioned.

Conditions to avoid : None known.

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
Method: Calculation method

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Acute inhalation toxicity - Product : Acute toxicity estimate: 56.04 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity - Product : Acute toxicity estimate : > 5,000 mg/kg
Method: Calculation method

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

Skin corrosion/irritation**Components:**

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

titanium dioxide:
Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: Normally reversible injuries

silica, amorphous, fumed, crystalline free:
Species: Rabbit
Assessment: No skin irritation
Method: OECD Test Guideline 404
Result: No skin irritation

octadecyl methacrylate:
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

hexadecyl methacrylate:
Result: Skin irritation

2,2'-phenyliminodiethanol:
Species: Rabbit
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

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

titanium dioxide:

Species: Rabbit

Result: Normally reversible injuries

Assessment: No eye irritation

Method: OECD Test Guideline 405

silica, amorphous, fumed, crystalline free:

Species: Rabbit

Result: No eye irritation

Assessment: No eye irritation

Method: OECD Test Guideline 405

octadecyl methacrylate:

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

hexadecyl methacrylate:

Result: Eye irritation

2,2'-phenyliminodiethanol:

Species: Rabbit

Assessment: Risk of serious damage to eyes.

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

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.

Method: OECD Test Guideline 429

Result: May cause sensitisation by skin contact.

titanium dioxide:

Test Type: Local lymph node assay (LLNA)

Exposure routes: Skin

Species: Mouse

Assessment: Does not cause skin sensitisation.

Method: OECD Test Guideline 429

Result: Does not cause skin sensitisation.

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Exposure routes: Skin
Species: Guinea pig
Assessment: Does not cause skin sensitisation.
Method: OECD Test Guideline 406
Result: Does not cause skin sensitisation.

octadecyl methacrylate:
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: Does not cause skin sensitisation.

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.

hexadecyl methacrylate:
Exposure routes: Skin
Species: Mouse
Method: OECD Test Guideline 429
Result: Does not cause skin sensitisation.

2,2'-phenyliminodiethanol:
Test Type: Local lymph node assay (LLNA)
Exposure routes: Skin contact
Method: OECD Test Guideline 442B
Result: May cause sensitisation by skin contact.

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

Components:

titanium dioxide:
Assessment: No skin irritation, No eye irritation
Does not cause skin sensitisation., Does not cause respiratory 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

titanium dioxide:
Genotoxicity in vitro : Test Type: Ames test

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Concentration: 100 - 200 ug/plate
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 Result: negative

Test Type: In vitro mammalian cell gene mutation test
 Concentration: 31 - 500 µg/L
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 476
 Result: negative

Test Type: Chromosome aberration test in vitro
 Concentration: 125 - 2500 µg/L
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 473
 Result: negative

silica, amorphous, fumed, crystalline free:

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

octadecyl methacrylate:

Genotoxicity in vitro : Concentration: .1 - 1200 µg/L
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 476
 Result: negative

Concentration: 33 - 5000 ug/plate
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 Result: negative

Concentration: 14.5 - 2233 µg/L
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 473
 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

hexadecyl methacrylate:

Genotoxicity in vitro : Concentration: .1 - 1200 µg/L
 Metabolic activation: with and without metabolic activation

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Method: OECD Test Guideline 476
 Result: negative

Concentration: 33 - 5000 ug/plate
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 Result: negative

Concentration: 14.5 - 2233 µg/L
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 473
 Result: negative

2,2'-phenyliminodiethanol:
 Genotoxicity in vitro : 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:

titanium dioxide:
 Genotoxicity in vivo : Test Type: Micronucleus test
 Species: Mouse (males)
 Application Route: Inhalation
 Exposure time: 5 consecutive days
 Dose: 0.8, 7.2, and 28.5 mg/m³
 Method: OECD Test Guideline 474
 Result: negative
 Test Type: Micronucleus test
 Species: Rat (male and female)
 Application Route: Oral
 Exposure time: once
 Dose: 500, 1000, and 2000 mg/kg bw
 Method: OECD Test Guideline 474
 Result: negative

silica, amorphous, fumed, crystalline free:
 Genotoxicity in vivo : Application Route: Inhalation
 Dose: 50 mg/m³
 Result: negative

octadecyl methacrylate:
 Genotoxicity in vivo : Application Route: Oral
 Exposure time: 72 h
 Dose: 5000 mg/kg
 Method: OECD Test Guideline 474
 Result: negative

methacrylic acid:

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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

hexadecyl methacrylate:
 Genotoxicity in vivo : Application Route: Oral
 Exposure time: 72 h
 Dose: 5000 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

Components:

titanium dioxide:
 Germ cell mutagenicity-
 Assessment : Tests on bacterial or mammalian cell cultures did not show
 mutagenic effects., Animal testing did not show any mutagenic
 effects.

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

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titanium dioxide:

Species: Rat, male and female

Application Route: Oral

Exposure time: 103 weeks

Dose: 0, 25000, 50000 ppm

Frequency of Treatment: 7 days/week

NOAEL: > 50.000 ppm

Method: No information available.

Remarks: Titanium Dioxide: based on the results of chronic inhalation studies (with positive results only in a single species - rat), IARC has concluded that: "There is inadequate evidence in humans for the carcinogenicity of titanium dioxide. " but that : "There is sufficient evidence in experimental animals for carcinogenicity of titanium dioxide". IARCs overall evaluation was that "titanium dioxide is possibly carcinogenic to humans (Group 2B)."

Huntsman has examined all of the available animal carcinogenicity and mechanistic data together with workplace epidemiology data for titanium dioxide and concludes that the weight of scientific evidence indicates that there is no causative link between titanium dioxide exposure and cancer risk in humans and that workplace exposures in compliance with applicable exposure standards will not result in lung cancer or chronic respiratory diseases in humans.

silica, amorphous, fumed, crystalline free:

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

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

Components:

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titanium dioxide:

Carcinogenicity -
Assessment**IARC**

: Not classifiable as a human carcinogen.

Group 2B: Possibly carcinogenic to humans
titanium dioxide**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
Talc (Mg₃H₂(SiO₃)₄)
(Silica, Crystalline (Respirable Size))**Reproductive toxicity****Components:**octadecyl methacrylate:
Effects on fertility: Species: Rat, male and female
Application Route: Oral
Dose: >= 1000 milligram per kilogram
Frequency of Treatment: 7 days/week
Method: OECD Test Guideline 422
Result: negativeSpecies: Rat, male and female
Application Route: Oral
Dose: 400 milligram per kilogram
Frequency of Treatment: 7 days/week
Method: OECD Test Guideline 416
Result: negative

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

hexadecyl methacrylate:

Species: Rat, male and female
Application Route: Oral
Dose: >=1000 milligram per kilogram
Frequency of Treatment: 7 days/week
Method: OECD Test Guideline 422
Result: negative

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Species: Rat, male and female
Application Route: Oral
Frequency of Treatment: 7 days/week
Method: OECD Test Guideline 416
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

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
Result: No teratogenic effects

titanium dioxide:

Species: Rat, male and female
Application Route: Oral
Dose: 100, 300, and 1000 mg/kg bw/
Duration of Single Treatment: 20 d
Frequency of Treatment: 7 days/week
General Toxicity Maternal: No observed adverse effect level:
1,000 mg/kg body weight
Developmental Toxicity: No observed adverse effect level:
1,000 mg/kg body weight
Method: OECD Test Guideline 414
Result: No adverse effects

silica, amorphous, fumed, crystalline free:

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

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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

octadecyl methacrylate:

Species: Rat, male and female
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level:
1,000 mg/kg body weight
Method: OECD Test Guideline 422
Result: No teratogenic effects

Species: Rat, female
Application Route: Inhalation
General Toxicity Maternal: No observed adverse effect level:
100 ppm
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.

hexadecyl methacrylate:

Species: Rat, male and female
Application Route: Oral

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General Toxicity Maternal: No observed adverse effect level:
1,000 mg/kg body weight
Method: OECD Test Guideline 422
Result: No teratogenic effects

Species: Rat, female
Application Route: Inhalation
General Toxicity Maternal: No observed adverse effect level:
100 ppm
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

Components:

titanium dioxide:

Reproductive toxicity -
Assessment: No evidence of adverse effects on sexual function and fertility,
or on development, based on animal experiments.**STOT - single exposure****Components:**

methyl methacrylate:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

octadecyl 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.

hexadecyl methacrylate:

Exposure routes: Inhalation

Target Organs: Respiratory Tract

Assessment: May cause respiratory irritation.

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2,2'-phenyliminodiethanol:

Target Organs: Blood

Assessment: The substance or mixture is classified as specific target organ toxicant, single exposure, category 1.

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

titanium dioxide:

Species: Rat, male and female

NOEC: 3500 mg/m³

Application Route: Ingestion

Test atmosphere: dust/mist

Exposure time: 2 yr

Number of exposures: 5 d

Method: Chronic toxicity

Species: Rat, male and female

NOEC: 10 - 50 mg/m³

Application Route: Inhalation

Exposure time: 2 yr

Number of exposures: 6 hours/day, 5 days/week

Method: Chronic toxicity

silica, amorphous, fumed, crystalline free:

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

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octadecyl methacrylate:
Species: Rat, male and female
NOAEL: 1000 mg/kg
Application Route: Ingestion
Number of exposures: 7 d
Method: Subchronic toxicity

Species: Rat, male and female
NOAEL: 120 mg/kg
Application Route: Ingestion
Exposure time: 2,160 h
Number of exposures: 7 d
Method: Subchronic toxicity

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

hexadecyl methacrylate:
Species: Rat, male and female
NOAEL: 1000 mg/kg
Application Route: Ingestion
Number of exposures: 7 d
Method: Subchronic toxicity

Species: Rat, male and female
NOAEL: 120 mg/kg
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: \geq 61 mg/kg
Application Route: oral (feed)
Exposure time: daily
Method: Chronic toxicity

Components:

titanium dioxide:
Repeated dose toxicity - Assessment : No skin irritation, No eye irritation
No adverse effect has been observed in chronic toxicity tests.

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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:**

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

titanium dioxide:

Toxicity to fish : LC50 (Cyprinodon variegatus (sheepshead minnow)): >
10,000 mg/l
Exposure time: 96 h
Test Type: semi-static test
Test substance: Marine water
Method: OECD Test Guideline 203

silica, amorphous, fumed, crystalline free:

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- 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
- 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.
- 2,2'-phenyliminodiethanol:
 Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 735 mg/l
 Exposure time: 96 h
- Talc (Mg₃H₂(SiO₃)₄):
 Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 100 mg/l
 Exposure time: 24 h
- 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

Components:

- methyl methacrylate:
 Toxicity to daphnia and other aquatic invertebrates : EC50: 69 mg/l
 Exposure time: 48 h
- silica, amorphous, fumed, crystalline free:
 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
- methacrylic acid:
 Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 130 mg/l
 End point: Immobilization
 Exposure time: 48 h
 Test Type: flow-through test
 Analytical monitoring: yes
 Test substance: Fresh water
 Method: Aquatic Invertebrate Acute Toxicity Test, Freshwater Daphnids
 GLP: yes
- 2,2'-phenyliminodiethanol:
 Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 94.4 mg/l
 Exposure time: 48 h

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Method: OECD Test Guideline 202

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

Components:

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

silica, amorphous, fumed, crystalline free:
 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

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

2,2'-phenyliminodiethanol:
 Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 393 mg/l
 Exposure time: 72 h
 Method: DIN 38 412 Part 8

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

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

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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

Components:

titanium dioxide:
 Plant toxicity : NOEC: 100,000 mg/kg
 Exposure time: 480 h

Components:

titanium dioxide:
 Sediment toxicity : (Gammarus pulex (Amphipod)): > 100000 mg/kg sediment dw
 Study: Acute
 Test Type: semi-static test
 Water: Fresh water
 Exposure duration: 28 d
 Method: ASTM Method, other

(Gammarus pulex (Amphipod)): 100000 mg/kg sediment dw
 Study: Chronic
 Test Type: semi-static test
 Water: Fresh water
 Exposure duration: 28 d
 Method: ASTM Method, other

(Gammarus pulex (Amphipod)): 14989 mg/kg sediment dw
 Study: Acute
 Test Type: semi-static test
 Water: Marine water
 Exposure duration: 10 d

Components:

titanium dioxide:
 Toxicity to terrestrial organisms : NOEC: 10,000 mg/kg
 Exposure time: 672 h

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

2,2'-phenyliminodiethanol:
Biodegradability : Result: Not biodegradable

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

Stability in water : No data available

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Photodegradation : No data available

Impact on Sewage Treatment : No data available

Bioaccumulative potential**Components:**methyl methacrylate:
Bioaccumulation : Bioconcentration factor (BCF): 3titanium dioxide:
Bioaccumulation : Species: Oncorhynchus mykiss (rainbow trout)
Bioconcentration factor (BCF): 19 - 352
Exposure time: 14 d
Test substance: Fresh water
Method: semi-static test
Remarks: Does not bioaccumulate.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**Components:**methyl methacrylate:
Partition coefficient: n-octanol/water : log Pow: 1.38methacrylic acid:
Partition coefficient: n-octanol/water : log Pow: 0.93 (72 °F / 22 °C)
pH: 2.2hexadecyl methacrylate:
Partition coefficient: n-octanol/water : log Pow: 8.64
Method: QSAR
GLP: no2,6-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**

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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 : No data available

Global warming potential (GWP) : No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Waste from residues : Dispose of as hazardous waste in compliance with local and national regulations.
 Dispose of contents/ container to an approved waste disposal plant.

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

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Class : 3
 Packing group : II
 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	2093
hydroquinone	123-31-9	100	
methanol	67-56-1	5000	
ethylene oxide	75-21-8	10	
Ethylene glycol	107-21-1	5000	

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)
 Skin corrosion or irritation
 Serious eye damage or eye irritation
 Respiratory or skin sensitisation
 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 >= 30 - < 50 %

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 titanium dioxide, ethylene oxide, which is/are known to the State of California to cause cancer, and methanol, Ethylene glycol, 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 listed in the Canadian NDSL.
AIIC	: On the inventory, or in compliance with the inventory
NZIoC	: On the inventory, or 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

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.

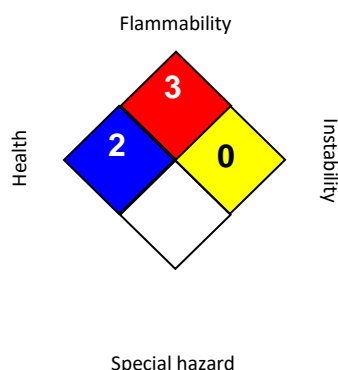
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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

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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

Revision Date	: 07/19/2021
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.



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HARDENER 2023 B

Version 1.1 Revision Date: 03/21/2023 SDS Number: 400000012364 Date of last issue: 03/15/2023
Date of first issue: 03/15/2023

Print Date 01/16/2024

**SECTION 1. IDENTIFICATION**

Product name : HARDENER 2023 B

Manufacturer or supplier's detailsCompany name of supplier : Huntsman Advanced Materials Americas LLC
Address : P.O. Box 4980The 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 : Hardener

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

Organic peroxides : Type E
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 : H242 Heating may cause a fire.
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:**

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P210 Keep away from heat/ sparks/ open flames/ hot surfaces.
 No smoking.

P220 Keep/ Store away from clothing/ combustible materials.

P234 Keep only in original container.

P261 Avoid breathing dust.

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.

P363 Wash contaminated clothing before reuse.

P391 Collect spillage.

Storage:

P410 Protect from sunlight.

P411 + P235 Store at temperatures not exceeding .? °C/ .? °F.

Keep cool.

P420 Store away from other materials.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Hazardous components

Chemical name	CAS-No.	Concentration (% w/w)
dibenzoyl peroxide	94-36-0	20 - 30
silicon dioxide	7631-86-9	1 - 5
2,2'-[(1-methylethylidene)bis(4,1-phenyleneoxymethylene)]bisoxirane	1675-54-3	1 - 5
carbon black	1333-86-4	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

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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 : Immediately flush eye(s) with plenty of water.
Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : 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
- Unsuitable extinguishing media : Exercise caution when using a high volume water jet as it may scatter and spread fire
- Specific hazards during : Do not allow run-off from fire fighting to enter drains or water

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- firefighting courses.
- Hazardous combustion products : Carbon oxides
Halogenated compounds
- 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.
Avoid dust formation.
Avoid breathing dust.
Remove all sources of ignition.
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 an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

- Advice on protection against fire and explosion : Avoid dust formation.
Provide appropriate exhaust ventilation at places where dust is formed.
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.
Avoid formation of respirable particles.
Do not breathe vapours/dust.

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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.
 Open drum carefully as content may be under pressure.
 Dispose of rinse water in accordance with local and national regulations.

- Conditions for safe storage : Store in cool place.
 Keep in a 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.

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
dibenzoyl peroxide	94-36-0	TWA	5 mg/m ³	ACGIH
		TWA	5 mg/m ³	OSHA Z-1
		TWA	5 mg/m ³	NIOSH REL
		TWA	5 mg/m ³	OSHA P0
silicon dioxide	7631-86-9	TWA (Dust)	20 Million particles per cubic foot (Silica)	OSHA Z-3
		TWA (Dust)	80 mg/m ³ / %SiO ₂ (Silica)	OSHA Z-3
		TWA (Respirable dust)	0.05 mg/m ³ (Silica)	NIOSH REL
		TWA	6 mg/m ³ (Silica)	NIOSH REL
		PEL (respirable)	0.05 mg/m ³	OSHA CARC

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carbon black	1333-86-4	TWA (Inhalable particulate matter)	3 mg/m3	ACGIH
		TWA	3.5 mg/m3	OSHA Z-1
		TWA	3.5 mg/m3	NIOSH REL
		TWA	3.5 mg/m3	OSHA P0
		TWA	0.1 mg/m3 (PAHs)	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

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 : 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 : black

Odour : slight

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

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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 : 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 : 1.1 g/cm³ (77 °F / 25 °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 : Decomposition energy (mass): 281 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

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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	:	Heat, flames and sparks.
Incompatible materials	:	None known.
Hazardous decomposition products	:	No decomposition if stored and applied as directed.
Hazardous decomposition products	:	carbon dioxide carbon monoxide Halogenated compounds

SECTION 11. TOXICOLOGICAL INFORMATION**Acute toxicity****Components:****dibenzoyl peroxide:**

Acute oral toxicity	:	LD50 (Mouse, male and female): > 2,000 mg/kg Method: OECD Test Guideline 401 Assessment: The substance or mixture has no acute oral toxicity
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 oral toxicity	:	LD50 (Rat): > 5,000 mg/kg Method: OECD Test Guideline 401
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
Acute dermal toxicity	:	LD50 (Rabbit): > 5,000 mg/kg

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

Acute oral toxicity	:	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.
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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

carbon black:

Acute oral toxicity : LD50 (Rat, male and female): > 8,000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 4.6 mg/m³
Exposure time: 4 h
Test atmosphere: dust/mist

Skin corrosion/irritation**Components:****dibenzoyl peroxide:**

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

silicon dioxide:

Species : Rabbit
Assessment : No skin irritation
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.

carbon black:

Species : Rabbit
Exposure time : 4 h
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

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silicon dioxide:

Species : Rabbit
Result : No eye irritation
Assessment : No eye irritation
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

carbon black:

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 sensitizer, sub-category 1B.

carbon black:

Test Type : Buehler Test
Exposure routes : Skin
Species : Guinea pig
Assessment : Does not cause skin sensitisation.
Method : OECD Test Guideline 406
Result : Does not cause skin sensitisation.

Exposure routes : Respiratory Tract
Species : Mouse
Assessment : Does not cause respiratory sensitisation.
Result : Does not cause skin sensitisation.

Germ cell mutagenicity**Components:****dibenzoyl peroxide:**

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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

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

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

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

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

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Dose: 50,250,500,1000 mg/kg bw/day
 Method: OECD Test Guideline 488
 Result: negative

carbon black:

Genotoxicity in vitro : Test Type: sister chromatid exchange assay
 Test system: Chinese hamster ovary cells
 Concentration: 0.00032-1 mg/ml
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 479
 Result: negative

Test Type: In vitro mammalian cell gene mutation test
 Test system: mouse lymphoma cells
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 476
 Result: negative

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

Genotoxicity in vivo : Test Type: in vivo assay
 Species: Rat (females)
 Cell type: Somatic
 Application Route: Inhalation
 Dose: 10 - 100 mg/kg
 Result: positive

Test Type: in vivo assay
 Species: Rat (females)
 Application Route: Inhalation
 Exposure time: 13 Weeks
 Dose: 1 - 50 mg/m³
 Result: negative

Test Type: in vivo assay
 Application Route: Oral
 Exposure time: 6 h
 Dose: 1%
 Method: OECD Test Guideline 477
 Result: negative

Germ cell mutagenicity - Assessment : Contains no ingredient listed as a mutagen

Carcinogenicity**Components:****dibenzoyl peroxide:**

Species : Mouse, male and female
 Application Route : Dermal
 Exposure time : 104 weeks

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Result : negative

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

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

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Frequency of Treatment : 7 days/week
NOEL : 2 mg/kg bw/day
Method : OECD Test Guideline 453
Result : negative
Target Organs : Digestive organs

carbon black:

Species : Mouse, female
Application Route : Inhalation
Exposure time : 13.5 month(s)
Dose : 7.5 - 12 mg/m³
Frequency of Treatment : 5 daily
Method : OECD Test Guideline 451
Result : negative

Species : Mouse, male and female
Application Route : Dermal
Exposure time : 18 month(s)
Frequency of Treatment : 3 daily
Result : negative

Species : Rat, female
Application Route : Oral
Exposure time : 24 month(s)
Dose : 52 mg/kg
Frequency of Treatment : 7 daily
Result : negative

Species : Rat, male and female
Application Route : Inhalation
Exposure time : 24 month(s)
Dose : 7,5 - 12,2 mg/m³
Frequency of Treatment : 5 daily
Method : OECD Test Guideline 451
Result : positive
Target Organs : Lungs

Species : Mouse
Application Route : Dermal
Exposure time : 9 - 24 month(s)
Dose : 6 - 60%
Frequency of Treatment : 2 daily
Method : OECD Test Guideline 451
Result : negative

Species : Mouse, male and female
Application Route : Oral
Exposure time : 12 - 18 month(s)
Dose : 10%
Frequency of Treatment : 7 daily
Result : negative

Species : Rat, male and female
Application Route : Inhalation
Exposure time : 24 month(s)
Dose : 2,5 mg/m³

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Frequency of Treatment : 16 hr/day, 5 d/wk
 Method : OECD Test Guideline 451
 Result : positive
 Target Organs : Lungs

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen, Tumours produced in rats on inhalation of very high concentrations are believed to be the result of prolonged "lung overload" and are not considered relevant to man.

IARC Group 1: Carcinogenic to humans
 silicon dioxide 7631-86-9
 (Silica dust, crystalline)

OSHA OSHA specifically regulated carcinogen
 silicon dioxide 7631-86-9
 (crystalline silica)

NTP Known to be human carcinogen
 silicon dioxide 7631-86-9
 (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: NOAEL: 500 mg/kg body weight
 General Toxicity F1: NOAEL: 500 mg/kg body weight
 Method: OECD Test Guideline 422

Effects on foetal development : Species: Rat
 Dose: 100, 300 or 1000 mg/kg/day
 General Toxicity Maternal: NOAEL: 300 mg/kg body weight
 Developmental Toxicity: NOAEL: 300 mg/kg body weight
 Method: OECD Test Guideline 414

silicon dioxide:

Effects on foetal development : Species: Mouse
 Application Route: Oral
 General Toxicity Maternal: NOAEL: 1,340 mg/kg body weight
 Method: OECD Test Guideline 414
 Result: No teratogenic effects

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

Species: Rat
 Application Route: Oral

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General Toxicity Maternal: NOAEL: 1,350 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

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

Effects on fertility : 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: NOEL: 540 mg/kg body weight
General Toxicity F1: NOEL: 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.

Effects on foetal development : 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: NOAEL: 30 mg/kg body weight
Developmental Toxicity: NOAEL: 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: NOAEL: 60 mg/kg body weight
Developmental Toxicity: NOAEL: 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: NOAEL: 180 mg/kg body weight
Developmental Toxicity: NOAEL: > 540 mg/kg body weight
Method: OECD Test Guideline 414
Result: No teratogenic effects

STOT - single exposure

No data available

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STOT - repeated exposure**Components:****carbon black:**

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

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

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

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

carbon black:

Species : Mouse, male and female

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NOEL : > 1000000 mg/kg
 Application Route : oral (feed)
 Exposure time : 12 - 18 months
 Number of exposures : continuously

Species : Rat, females
 NOEL : 52 mg/kg
 Application Route : oral (feed)
 Exposure time : 52 Weeks
 Number of exposures : Continuously
 Dose : 2.05 g/kg

Species : Mouse, females
 NOEL : 137 mg/kg
 Application Route : oral (feed)
 Exposure time : 52 Weeks
 Number of exposures : Continuously
 Dose : 2.05 g/kg
 Method : OECD Test Guideline 413

Species : Rat, male and female
 LOEC : 2.5 mg/m³
 Application Route : inhalation (dust/mist/fume)
 Exposure time : 24 Months
 Number of exposures : 16 h/day, 5 days/wk
 Dose : 2.5 or 6.5 mg/m³
 Method : OECD Test Guideline 452
 Target Organs : Lungs

Species : Mouse, male and female
 Application Route : Dermal
 Number of exposures : 3 times/week
 Dose : 20%
 Symptoms : see user defined free text

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

No data available

SECTION 12. ECOLOGICAL INFORMATION**Ecotoxicity****Components:****dibenzoyl peroxide:**

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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

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

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

M-Factor (Acute aquatic toxicity) : 10

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

M-Factor (Chronic aquatic toxicity) : 10

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

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

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

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

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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

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

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

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

Toxicity to microorganisms : IC50 (activated sludge): > 100 mg/l
Exposure time: 3 h
Test Type: static test
Test substance: Fresh water

Ecotoxicology Assessment

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

carbon black:

Toxicity to fish : LC50 : > 1,000 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 5,600 mg/l
Exposure time: 24 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : ErC50: > 10,000 mg/l
Exposure time: 72 h

Toxicity to microorganisms : IC0: > 800 mg/l
Exposure time: 3 h

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Persistence and degradability**Components:****dibenzoyl peroxide:**

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

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

Biodegradability : aerobic
Inoculum: activated sludge, non-adapted
Concentration: 20 mg/l
Result: Not readily biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301F

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

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

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

carbon black:

Biodegradability : Result: Not readily biodegradable.
Biodegradation: < 60 %
Exposure time: 28 d

Bioaccumulative potential**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:

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

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

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carbon black:

Bioaccumulation : Bioconcentration factor (BCF): 1

Mobility in soil**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

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.
Very toxic to aquatic life with long lasting effects.**SECTION 13. DISPOSAL CONSIDERATIONS****Disposal methods**Waste from residues : Dispose of contents and container in accordance with all local,
regional, national and international regulations.
Do not dispose of waste into sewer.
Do not contaminate ponds, waterways or ditches with
chemical or used container.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 3108
Proper shipping name : Organic peroxide type E, solid
Class : 5.2

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Packing group : Not assigned by regulation
 Labels : Organic Peroxides, Keep Away From Heat
 Packing instruction (cargo aircraft) : 570
 Packing instruction (passenger aircraft) : 570

IMDG-Code

UN number : UN 3108
 Proper shipping name : ORGANIC PEROXIDE TYPE E, SOLID

Class : 5.2
 Packing group : Not assigned by regulation
 Labels : 5.2
 EmS Code : F-J, S-R
 Marine pollutant : yes(DIBENZOYL PEROXIDE)

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 3108
 Proper shipping name : Organic peroxide type E, solid

Class : 5.2
 Packing group : Not assigned by regulation
 Labels : ORGANIC PEROXIDE
 ERG Code : 145
 Marine pollutant : yes(DIBENZOYL PEROXIDE)

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 : Organic peroxides
 Respiratory or skin sensitisation
 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	>= 20 - < 30 %
zinc distearate	557-05-1	>= 1 - < 5 %

This product does not contain any hazardous air pollutants (HAP) >=0.1%, as defined by the U.S. Clean Air Act Section 112 (40 CFR 61

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California Prop. 65

WARNING: This product can expose you to chemicals including 4,4'-isopropylidenediphenol, 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.
- AIIC : All components are listed on the inventory, regulatory obligations/restrictions apply. Please contact your sales representative for more information before import into Australia
- ENCS : On the inventory, or 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

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.

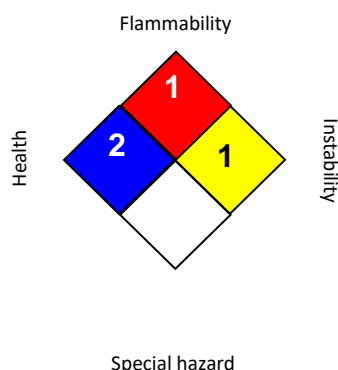
US. Toxic Substances Control Act (TSCA) Section 12(b) Export Notification (40 CFR 707, Subpt D)

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

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SECTION 16. OTHER INFORMATION**Further information****NFPA 704:****HMIS® IV:**

HEALTH		2
FLAMMABILITY		1
PHYSICAL HAZARD		1

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 CARC	: OSHA Specifically Regulated Chemicals/Carcinogens
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
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 CARC / PEL	: Permissible exposure limit (PEL)
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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chemical-concepts.com

800.220.1966

410 Pike Road • Huntingdon Valley, PA 19006