

SAFETY DATA SHEET

according to GB/T 16483 and GB/T 17519

TRIGONOX 279

Version	Revision Date:	CN / EN	Date of last issue: 2021/12/21
2.0	2022/12/26		Date of first issue: 2015/09/11

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TRIGONOX 279

Manufacturer or supplier's details

Company : Nouryon Functional Chemicals B.V.

Address : Haaksbergweg 88
NL 1101 BZ Amsterdam
Netherlands

Telephone : +31889840367

Emergency telephone number : 24 hours:+31 57 06 79211, US-CHEMTREC:1-800-424-9300,
CA-CANUTEC:1-613-996-6666, JP: +81 (836) 74 8810, CN: 化
学事故应急咨询电话 : +86 532 8388 9090-:
Nouryon Emergency Response Centre: +31 570 679211
National Registration Centre of Chemicals (NRCC): +86 532
8388 9090

E-mail address : polymer.emeia@nouryon.com

Recommended use of the chemical and restrictions on use

Recommended use : Curing agent

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	: Clear liquid
Colour	: colourless
Odour	: Faint.

Heating may cause a fire. May be harmful if swallowed. Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation. May cause respiratory irritation. Suspected of damaging fertility or the unborn child. Toxic to aquatic life.

GHS Classification

Organic peroxides : Type D

Acute toxicity (Oral) : Category 5

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Skin corrosion/irritation	:	Category 2
Serious eye damage/eye irritation	:	Category 2A
Skin sensitisation	:	Category 1
Reproductive toxicity	:	Category 2
Specific target organ toxicity - single exposure	:	Category 3 (respiratory tract irritation)
Short-term (acute) aquatic hazard	:	Category 2

GHS label elements

Hazard pictograms	:	
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Signal word	:	Danger
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Hazard statements	:	<p>H242 Heating may cause a fire. H303 May be harmful if swallowed. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H335 May cause respiratory irritation. H361 Suspected of damaging fertility or the unborn child. H401 Toxic to aquatic life.</p>
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Precautionary statements	:	<p>Prevention: P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood. 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. P235 Keep cool. P261 Avoid breathing mist or vapours.</p>
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P264 Wash skin thoroughly after handling.
 P271 Use only outdoors or in a well-ventilated area.
 P272 Contaminated work clothing should not be allowed out of the workplace.
 P273 Avoid release to the environment.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of water.
 P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.
 P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P312 Call a POISON CENTER/ doctor if you feel unwell.
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
 P337 + P313 If eye irritation persists: Get medical advice/ attention.
 P362 + P364 Take off contaminated clothing and wash it before reuse.
 P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
 P405 Store locked up.
 P410 Protect from sunlight.
 P420 Store away from other materials.

Disposal:

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

Physical and chemical hazards

Heating may cause a fire.

Health hazards

May be harmful if swallowed. Causes skin irritation. Causes serious eye irritation. May cause an allergic skin reaction. Suspected of damaging fertility or the unborn child. May cause respiratory irritation.

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Environmental hazards

Toxic to aquatic life.

Other hazards which do not result in classification

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

Chemical name	CAS-No.	Concentration (% w/w)
Diacetone alcohol	123-42-2	>= 30 -<= 60
Acetylacetone peroxide	37187-22-7	>= 10 -<= 30
tert-Butyl peroxybenzoate	614-45-9	>= 7 -<= 12
Diethylene glycol	111-46-6	>= 7 -<= 9
Acetylacetone	123-54-6	>= 1 -<= 5

4. FIRST AID MEASURES

- General advice : Move out of dangerous area.
Consult a physician.
Show this safety data sheet to the doctor in attendance.
- If inhaled : If breathed in, move person into fresh air.
Consult a physician after significant exposure.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Rinse immediately with plenty of water.
If skin irritation persists, call a physician.
- In case of eye contact : Rinse with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
Obtain medical attention.
- If swallowed : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Obtain medical attention.
- Most important symptoms and effects, both acute and : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms

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delayed are known.
 May be harmful if swallowed.
 Causes skin irritation.
 May cause an allergic skin reaction.
 Causes serious eye irritation.
 May cause respiratory irritation.
 Suspected of damaging fertility or the unborn child.

Notes to physician : Treat symptomatically.

5. FIREFIGHTING MEASURES

- Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

 - Specific hazards during firefighting : CAUTION: reignition may occur.
 Supports combustion.
 Water spray may be ineffective unless used by experienced firefighters.
 Do not allow run-off from fire fighting to enter drains or water courses.
 Hazardous decomposition products formed under fire conditions.

 - Hazardous combustion products : Fire will produce smoke containing hazardous combustion products (see section 10).
 Carbon oxides

 - Specific extinguishing methods : Use water spray to cool unopened containers.
 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.

 - Special protective equipment for firefighters : In the event of fire, wear self-contained breathing apparatus.
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6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Use personal protective equipment.
 Wear respiratory protection.
 Ensure adequate ventilation.
 Remove all sources of ignition.

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- Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
- Environmental precautions : Prevent product from entering drains.
Discharge into the environment must be avoided.
- Methods and materials for containment and cleaning up : Soak up with inert absorbent material and dispose of as hazardous waste.
Use only inert inorganic material such as vermiculite or perlite as absorbent.
Keep mixture of absorbent material and spilled product wetted with water.
Confinement must be avoided.
Never return spills in original containers for re-use.
- Prevention of secondary hazards : Evacuate personnel to safe areas.
Only qualified personnel equipped with suitable protective equipment may intervene.
Prevent unauthorised persons entering the zone.

7. HANDLING AND STORAGE

Handling

- Advice on protection against fire and explosion : Use explosion protected equipment.
Keep away from sources of ignition - No smoking.
No sparking tools should be used.
Keep away from reducing agents (e.g. amines), acids, alkalis and heavy metal compounds (e.g. accelerators, driers, metal soaps).
Do not cut or weld on or near this container even when empty.
Keep away from combustible material.
- Advice on safe handling : For personal protection see section 8.
Avoid formation of aerosol.
Do not breathe vapours or spray mist.
Avoid contact with skin, eyes and clothing.
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.
- Avoidance of contact : Contact with the following incompatible materials will result in

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hazardous decomposition:

Acids and bases

Iron

Copper

Reducing agents

Heavy metals

Rust

Do not mix with peroxide accelerators, unless under controlled processing.

Use only stainless steel 316, PP, polyethylene or glass-lined equipment.

For queries regarding the suitability of other materials please contact the supplier.

Storage

Conditions for safe storage : Prevent unauthorized access.
 No smoking.
 Keep in a well-ventilated place.
 Electrical installations / working materials must comply with the technological safety standards.
 Keep only in original container.
 Store away from other materials.

Further information on storage stability : If product freezes or separates, contact the manufacturer.

Maximum storage temperature is for quality only.

Minimum storage temperature: : Avoid temperatures below:
 -5 °C

Maximum storage temperature: : 25 °C

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Diacetone alcohol	123-42-2	PC-TWA	240 mg/m ³	CN OEL

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		TWA	50 ppm	ACGIH
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Occupational exposure limits of decomposition products

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Benzene	71-43-2	PC-TWA	6 mg/m ³	CN OEL
		Further information: G1 - Carcinogenic to humans, Skin		
		PC-STEL	10 mg/m ³	CN OEL
		Further information: G1 - Carcinogenic to humans, Skin		
		TWA	0.05 ppm	ACGIH
		STEL	2.5 ppm	ACGIH
tert-Butanol	75-65-0	TWA	100 ppm	ACGIH
		TWA	100 ppm	ACGIH
Acetone	67-64-1	PC-TWA	300 mg/m ³	CN OEL
		PC-STEL	450 mg/m ³	CN OEL
		TWA	250 ppm	ACGIH
		STEL	500 ppm	ACGIH
		TWA	250 ppm	ACGIH
		STEL	500 ppm	ACGIH
Carbon dioxide	124-38-9	PC-TWA	9,000 mg/m ³	CN OEL
		PC-STEL	18,000 mg/m ³	CN OEL
		TWA	5,000 ppm	ACGIH
		STEL	30,000 ppm	ACGIH
Benzoic acid	65-85-0	TWA (Inhalable fraction and vapor)	0.5 mg/m ³	ACGIH
Acetylacetone	123-54-6	TWA	25 ppm	ACGIH

Engineering measures : Explosion proof ventilation recommended.
Effective exhaust ventilation system
Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Respiratory protection : In the case of vapour or aerosol formation use a respirator

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		with an approved filter. Filter A
Eye/face protection	:	Tightly fitting safety goggles
Skin and body protection	:	Protective suit
Hand protection		
Material	:	Neoprene
Material	:	Nitrile rubber
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday. Wash contaminated clothing before re-use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	:	Clear liquid
Colour	:	colourless
Odour	:	Faint.
Odour Threshold	:	No data available
pH	:	Not applicable
Melting point	:	-5 °C
Boiling point/boiling range	:	Decomposes below the boiling point.
Flash point	:	Above the SADT value No flash point was obtained, but the product may release flammable vapour.
Evaporation rate	:	No data available

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Flammability (liquids)	:	Decomposition products may be flammable.
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	not determined
Relative vapour density	:	No data available
Relative density	:	1.054 (20 °C)
Bulk density	:	Not applicable
Solubility(ies)		
Water solubility	:	partly miscible (20 °C)
Solubility in other solvents	:	Description: Soluble in most organic solvents.
Partition coefficient: n-octanol/water	:	No data available
Auto-ignition temperature	:	Test method not applicable
Decomposition temperature	:	SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the SADT. Contact with incompatible substances can cause decomposition below the SADT.
Self-Accelerating decomposition temperature (SADT)	:	60 °C
Viscosity		
Viscosity, dynamic	:	12 mPa.s (20 °C)
Viscosity, kinematic	:	11.39 mm ² /s (20 °C)

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Explosive properties	:	Not explosive
Oxidizing properties	:	Not classified as oxidising.
Active Oxygen Content	:	4.3 - 4.7 %
Organic peroxides	:	17 - 43 %

10. STABILITY AND REACTIVITY

Reactivity	:	Stable under normal conditions.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Confinement must be avoided. Heat, flames and sparks.
Incompatible materials	:	Contact with the following incompatible materials will result in hazardous decomposition: Acids and bases Iron Copper Reducing agents Heavy metals Rust Do not mix with peroxide accelerators, unless under controlled processing. Use only stainless steel 316, PP, polyethylene or glass-lined equipment. For queries regarding the suitability of other materials please contact the supplier.
Hazardous decomposition products	:	No decomposition if stored and applied as directed.
Hazardous decomposition products	:	Benzene tert-Butanol Acetone Carbon dioxide Methane Benzoic acid

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Carbon oxides
Acetylacetone
Hydrocarbons

Thermal decomposition : SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the SADT. Contact with incompatible substances can cause decomposition below the SADT.

Self-Accelerating decomposition temperature (SADT) : 60 °C

11. TOXICOLOGICAL INFORMATION

Acute toxicity

May be harmful if swallowed.

Product:

Acute oral toxicity : LD50 Oral (Rat): 2,778 mg/kg
Remarks: The value is calculated

Acute inhalation toxicity : LC50 (Rat): 15.0 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Remarks: The value is calculated

Acute dermal toxicity : LD50 Dermal (Rat): > 5,000 mg/kg
Remarks: The value is calculated

Components:

Diacetone alcohol:

Acute oral toxicity : LD50 (Rat, male and female): 3,002 mg/kg
Method: OECD Test Guideline 401
Symptoms: Central nervous system depression

Acute inhalation toxicity : LC0 (Rat, male and female): > 7.6 mg/l
Exposure time: 4 h
Test atmosphere: vapour

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Method: OECD Test Guideline 403

Assessment: The substance or mixture has no acute inhalation toxicity

Acute dermal toxicity : LD0 (Rat, male and female): > 1,875 mg/kg
 Method: OECD Test Guideline 402
 Assessment: The substance or mixture has no acute dermal toxicity

Acetylacetone peroxide:

Acute oral toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
 Method: OECD Test Guideline 401
 GLP: yes

Acute inhalation toxicity : LC50 (Rat, male): > 13.1 mg/l
 Exposure time: 1 h
 Test atmosphere: aerosol
 Assessment: The substance or mixture has no acute inhalation toxicity

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

tert-Butyl peroxybenzoate:

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

Acute inhalation toxicity : LC50 (Rat, male and female): > 1.01 - 4.9 mg/l
 Exposure time: 4 h
 Test atmosphere: dust/mist
 Method: OECD Test Guideline 436
 GLP: yes
 Assessment: The component/mixture is moderately toxic after short term inhalation.

Acute dermal toxicity : LD50 (Rat, male and female): > 2,000 mg/kg
 Method: OECD Test Guideline 402

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GLP: yes
 Assessment: The substance or mixture has no acute dermal toxicity

Diethylene glycol:

Acute oral toxicity : LD50 Oral (Rat, male and female): > 300 - 2,000 mg/kg

Acetylacetone:

Acute oral toxicity : LD50 (Rat, female): 570 mg/kg

Acute inhalation toxicity : LC50 (Rat, male and female): 5.1 mg/l
 Exposure time: 4 h
 Test atmosphere: vapour

Acute dermal toxicity : LD50 (Rabbit, female): 790 mg/kg

Skin corrosion/irritation

Causes skin irritation.

Components:

Diacetone alcohol:

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

Acetylacetone peroxide:

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

tert-Butyl peroxybenzoate:

Species : Rabbit
 Result : Skin irritation

Diethylene glycol:

Species : Rabbit
 Exposure time : 23 h
 Method : Draize Test
 Result : No skin irritation

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Remarks : Information taken from reference works and the literature.

Acetylacetone:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Components:

Diacetone alcohol:

Species : Rabbit
Result : Irritation to eyes, reversing within 21 days
Method : OECD Test Guideline 405

Acetylacetone peroxide:

Species : Rabbit
Result : Irritating to eyes.
Method : OECD Test Guideline 405
GLP : yes

tert-Butyl peroxybenzoate:

Species : Rabbit
Result : No eye irritation

Diethylene glycol:

Species : Rabbit
Result : No eye irritation
Exposure time : 24 h
Remarks : Information taken from reference works and the literature.

Acetylacetone:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

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Respiratory sensitisation

Not classified based on available information.

Components:

Diacetone alcohol:

Test Type	: Maximisation Test
Species	: Guinea pig
Assessment	: Does not cause skin sensitisation.
Method	: OECD Test Guideline 406

Acetylacetone peroxide:

Test Type	: Maximisation Test
Species	: Guinea pig
Assessment	: The product is a skin sensitiser, sub-category 1B.
Method	: OECD Test Guideline 406
GLP	: yes

Assessment	: Eye irritation
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May be harmful if swallowed.

tert-Butyl peroxybenzoate:

Assessment	: May cause sensitisation by skin contact.
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Diethylene glycol:

Test Type	: Maximisation Test
Species	: Guinea pig
Method	: Regulation (EC) No. 440/2008, Annex, B.6
Result	: Does not cause skin sensitisation.
GLP	: yes

Acetylacetone:

Test Type	: Local lymph node assay (LLNA)
Species	: Mouse
Assessment	: Does not cause skin sensitisation.
Method	: OECD Test Guideline 429
GLP	: yes

Germ cell mutagenicity

Not classified based on available information.

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Components:

Diacetone alcohol:

Genotoxicity in vitro : Test Type: Ames test
 Test system: Escherichia coli
 Metabolic activation: with and without metabolic activation
 Method: OECD Test Guideline 471
 Result: negative

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

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

Acetylacetone peroxide:

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

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

Genotoxicity in vivo : Test Type: Micronucleus test
 Species: Mouse (male and female)
 Application Route: Intraperitoneal
 Method: OECD Test Guideline 474
 Result: negative
 GLP: yes

tert-Butyl peroxybenzoate:

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Genotoxicity in vitro : Test Type: In vitro gene mutation study in mammalian cells
Result: positive

Test Type: Ames test
Method: OECD Test Guideline 471
Result: positive

Test Type: Chromosome aberration test in vitro
Result: positive

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Method: OECD Test Guideline 474
Result: negative

Acetylacetone:

Genotoxicity in vitro : Test Type: Ames test
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 479
Result: positive
GLP: yes

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

Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: positive
GLP: yes

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

Genotoxicity in vivo : Test Type: Micronucleus test

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Method: OECD Test Guideline 474
Result: positive

Test Type: Chromosome aberration test in vivo
Method: OECD Test Guideline 483
Result: negative

Test Type: gene mutation test
Method: OECD Test Guideline 478
Result: Ambiguous results

Test Type: Chromosome aberration test in vivo
Method: OECD Test Guideline 475
Result: negative

Germ cell mutagenicity - Assessment : Not mutagenic.

Carcinogenicity

Not classified based on available information.

Components:

Diacetone alcohol:

Result : Not carcinogenic on laboratory animals.
Remarks : Read-across from supporting substance (structural analogue or surrogate).

tert-Butyl peroxybenzoate:

Remarks : No data available

Reproductive toxicity

Suspected of damaging fertility or the unborn child.

Components:

Diacetone alcohol:

Effects on fertility : Test Type: Fertility/early embryonic development
Species: Rat, male and female
Strain: wistar
Application Route: Oral
Dose: 0 100, 300, 1000 milligram per kilogram
General Toxicity - Parent: NOAEL: 300 mg/kg bw/day

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General Toxicity F1: NOAEL F1: 300 mg/kg bw/day
Method: OECD Test Guideline 422

Effects on foetal development : Species: Rabbit, female
Application Route: Oral
Dose: 100, 300, 800 milligram per kilogram
General Toxicity Maternal: NOAEL: 300 mg/kg bw/day
Embryo-foetal toxicity: NOAEL: 100 mg/kg bw/day
Method: OECD Test Guideline 414
GLP: yes

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments.

Acetylacetone peroxide:

Effects on foetal development : Test Type: Pre-natal
Species: Rat, females
Strain: wistar
Application Route: Oral
General Toxicity Maternal: NOAEL: 500 mg/kg bw/day
Developmental Toxicity: NOAEL: 150 mg/kg bw/day
Method: OECD Test Guideline 414
GLP: yes

tert-Butyl peroxybenzoate:

Effects on fertility : Species: Rat, male and female
Application Route: Oral
Dose: 0 100, 300, 750, 1000 milligram per kilogram
General Toxicity - Parent: NOAEL: 300 mg/kg bw/day
General Toxicity F1: NOAEL F1: 300 mg/kg bw/day
Method: OECD Test Guideline 421
GLP: yes

Diethylene glycol:

Effects on fertility : Test Type: Two-generation study
Species: Mouse, male and female
Application Route: Oral
General Toxicity - Parent: NOAEL: 3,060 mg/kg bw/day

Effects on foetal development : Test Type: Pre-natal
Species: Rabbit
Application Route: Oral

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General Toxicity Maternal: NOAEL: 1,000 mg/kg bw/day
 Method: OECD Test Guideline 414
 GLP: yes

Acetylacetone:

Effects on fertility : Species: Rat
 Application Route: Inhalation
 Dose: 0, 50, 200, 400 ppm
 General Toxicity - Parent: NOAEC: 200 ppm
 Method: OECD Test Guideline 414
 GLP: yes

STOT - single exposure

May cause respiratory irritation.

Components:

Diacetone alcohol:

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

tert-Butyl peroxybenzoate:

Remarks : Not classified due to data which are conclusive although insufficient for classification.

STOT - repeated exposure

Not classified based on available information.

Components:

Diacetone alcohol:

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

tert-Butyl peroxybenzoate:

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

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Repeated dose toxicity

Components:

Diacetone alcohol:

Species	: Rat
NOAEL	: 100 mg/kg
Application Route	: Oral
Exposure time	: 44 d

Species	: Rat
NOAEL	: 1.041 mg/l
Application Route	: Inhalation
Test atmosphere	: vapour
Exposure time	: 14 d
Target Organs	: Kidney

Acetylacetone peroxide:

Species	: Rat, male and female
NOAEL	: 1000 mg/kg bw/day
Application Route	: Oral
Exposure time	: 28 d
Method	: OECD Test Guideline 407
GLP	: yes
Target Organs	: Kidney

Species	: Rat, male and female
NOAEL	: 250 mg/kg bw/day
Application Route	: Oral
Exposure time	: 90 d
Method	: OECD Test Guideline 408
GLP	: yes

Repeated dose toxicity - Assessment	: Eye irritation
-------------------------------------	------------------

May be harmful if swallowed.

tert-Butyl peroxybenzoate:

Species	: Rat
NOAEL	: 30 mg/kg
Application Route	: Oral
Exposure time	: 90 d

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Diethylene glycol:

Species	: Rat, male and female
NOAEL	: 936 mg/kg bw/day
Application Route	: Oral
Method	: OECD Test Guideline 407
GLP	: yes

Species	: Dog, male
NOAEL	: 2220 mg/kg bw/day
Application Route	: Dermal
Method	: OECD Test Guideline 410
GLP	: yes

Acetylacetone:

Species	: Rat, male and female
NOAEC	: 0.42 mg/l
Application Route	: Inhalation
Test atmosphere	: vapour
Exposure time	: 90 d
Method	: OECD Test Guideline 413
GLP	: yes
Target Organs	: Blood, Central nervous system

Aspiration toxicity

Not classified based on available information.

Components:

Diacetone alcohol:

No aspiration toxicity classification

tert-Butyl peroxybenzoate:

No aspiration toxicity classification

Further information

Product:

Remarks : No further data available.

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Components:

Acetylacetone:

Remarks : Solvents may degrease the skin.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Diacetone alcohol:

Toxicity to fish	:	LC50 (<i>Oryzias latipes</i> (Orange-red killifish)): > 100 mg/l Exposure time: 96 h Test Type: semi-static test Method: OECD Test Guideline 203 GLP: yes
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (<i>Daphnia magna</i> (Water flea)): > 1,000 mg/l Exposure time: 48 h Test Type: Immobilization Method: OECD Test Guideline 202 GLP: yes
Toxicity to algae/aquatic plants	:	ErC50 (<i>Pseudokirchneriella subcapitata</i> (green algae)): > 1,000 mg/l Exposure time: 72 h Test Type: static test Method: OECD Test Guideline 201 GLP: yes NOEC (<i>Pseudokirchneriella subcapitata</i> (green algae)): 1,000 mg/l Exposure time: 72 h Test Type: static test Method: OECD Test Guideline 201 GLP: yes
Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)	:	NOEC (<i>Daphnia magna</i> (Water flea)): 100 mg/l End point: reproduction rate Exposure time: 21 d Test Type: semi-static test Method: OECD Test Guideline 211 GLP: yes

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Toxicity to microorganisms : EC50 (activated sludge): > 1,000 mg/l
 Exposure time: 3 h
 Test Type: static test
 Method: OECD Test Guideline 209
 GLP: yes

Acetylacetone peroxide:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 67.6 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Method: OECD Test Guideline 203
 GLP: yes

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 7.1 mg/l
 Exposure time: 48 h
 Test Type: static test
 Method: OECD Test Guideline 202
 GLP: yes

Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): 5.4 mg/l
 Exposure time: 72 h
 Test Type: Growth inhibition
 Method: OECD Test Guideline 201
 GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC50 (Daphnia magna (Water flea)): 13 mg/l
 End point: Immobilization
 Exposure time: 21 d
 Test Type: semi-static test
 Method: OECD Test Guideline 211
 GLP: yes

tert-Butyl peroxybenzoate:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): 1.6 mg/l
 Exposure time: 96 h
 Test Type: semi-static test
 Method: OECD Test Guideline 203
 GLP: yes

NOEC (Danio rerio (zebra fish)): 0.72 mg/l
 Exposure time: 96 h

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

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

NOEC (Daphnia magna (Water flea)): 7.7 mg/l
 End point: Immobilization
 Exposure time: 48 h
 Test Type: static test
 Method: OECD Test Guideline 202
 GLP: yes

Toxicity to algae/aquatic plants : EC10 (Pseudokirchneriella subcapitata (green algae)): 0.44 mg/l
 Exposure time: 72 h
 Test Type: static test
 Method: OECD Test Guideline 201
 GLP: yes

ErC50 (Pseudokirchneriella subcapitata (green algae)): 0.8 mg/l
 Exposure time: 72 h
 Test Type: static test
 Method: OECD Test Guideline 201
 GLP: yes

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.72 mg/l
 Exposure time: 72 h
 Test Type: static test
 Method: OECD Test Guideline 201
 GLP: yes

M-Factor (Acute aquatic toxicity) : 1

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : EC10 (Daphnia magna (Water flea)): 0.49 mg/l
 End point: reproduction rate
 Exposure time: 21 d

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Test Type: semi-static test
 Method: OECD Test Guideline 211
 GLP: yes

Toxicity to microorganisms : EC50 (activated sludge): 43 mg/l
 Exposure time: 0.5 h
 Test Type: Respiration inhibition
 Method: Domestic OECD Guideline 209
 GLP: yes

Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

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

Diethylene glycol:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 75,200 mg/l
 Exposure time: 96 h
 Test Type: flow-through test
 Analytical monitoring: yes

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 15,380 mg/l
 Exposure time: 7 d
 Remarks: Information taken from reference works and the literature.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Ceriodaphnia dubia (water flea)): 8,590 mg/l
 Remarks: Information taken from reference works and the literature.

Acetylacetone:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 104 mg/l
 End point: mortality
 Exposure time: 96 h
 Test Type: flow-through test
 Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 25.9 mg/l
 End point: Immobilization
 Exposure time: 48 h
 Test Type: static test
 Method: OECD Test Guideline 202

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GLP: yes

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (microalgae)): 83.2 mg/l
 End point: Growth rate
 Exposure time: 72 h
 Test Type: static test
 Method: OECD Test Guideline 201
 GLP: yes

Toxicity to fish (Chronic toxicity) : NOEC (Pimephales promelas (fathead minnow)): 10 mg/l
 Exposure time: 34 d
 Test Type: flow-through test
 Method: OECD Test Guideline 210
 GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 18 mg/l
 End point: reproduction rate
 Exposure time: 21 d
 Test Type: semi-static test
 Method: OECD Test Guideline 211
 GLP: yes

Toxicity to microorganisms : EC10 (activated sludge): 13.2 mg/l
 Exposure time: 3 h
 Test Type: static test
 Method: OECD Test Guideline 209
 GLP: yes

EC50 (activated sludge): 107.6 mg/l
 Exposure time: 3 h
 Test Type: static test
 Method: OECD Test Guideline 209
 GLP: yes

Persistence and degradability

Components:

Diacetone alcohol:

Biodegradability : Ready biodegradability
 Result: Readily biodegradable.
 Biodegradation: 98.5 %
 Exposure time: 28 d

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Method: OECD Test Guideline 301A

Acetylacetone peroxide:

Biodegradability : Ready biodegradability
 Inoculum: Activated sludge, domestic, non-adapted
 Chemical oxygen demand
 Result: Readily biodegradable.
 Biodegradation: 61 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301D
 GLP: yes

tert-Butyl peroxybenzoate:

Biodegradability : Result: Readily biodegradable.

Diethylene glycol:

Biodegradability : CO2 Evolution Test
 Inoculum: activated sludge, non-adapted
 Result: Readily biodegradable.
 Biodegradation: 70 - 80 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301B

Biochemical Oxygen Demand (BOD) : Remarks: No data available

Acetylacetone:

Biodegradability : Ready biodegradability
 Inoculum: activated sludge
 Result: Readily biodegradable.
 Biodegradation: > 80 %
 Exposure time: 28 d
 Method: OECD Test Guideline 301C

Bioaccumulative potential

Components:

Diacetone alcohol:

Bioaccumulation : Remarks: No bioaccumulation is expected.

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Partition coefficient: n-octanol/water : log Pow: -0.09
Remarks: estimated

Acetylacetone peroxide:

Partition coefficient: n-octanol/water : log Pow: 1.1 (25 °C)
Method: OECD Test Guideline 117

tert-Butyl peroxybenzoate:

Partition coefficient: n-octanol/water : log Pow: 3 (25 °C)

Diethylene glycol:

Bioaccumulation : Remarks: Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: -1.98 (20 °C)

Acetylacetone:

Partition coefficient: n-octanol/water : log Pow: 0.68
Method: Tested according to Annex V of Directive 67/548/EEC.

Mobility in soil

Components:

Diethylene glycol:

Mobility : Remarks: Adsorption to the solid soil particles is not expected.

Other adverse effects

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Components:

Diethylene glycol:

Results of PBT and vPvB assessment : This substance is not considered to be a PBT (Persistent, Bioaccumulation, Toxic) This substance is not considered to

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be vPvB (very Persistent nor very Bioaccumulating)

Acetylacetone:

Additional ecological information : None known.

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.
Dispose of contents/container in accordance with local regulation.

Contaminated packaging : Empty remaining contents.
Dispose of as unused product.
Do not burn, or use a cutting torch on, the empty drum.
Due to the high risk of contamination recycling/recovery is not recommended.
Follow all warnings even after the container is emptied.

14. TRANSPORT INFORMATION

International Regulations

UNRTDG

UN number : UN 3105
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID
(Acetylacetone peroxide, tert-Butyl peroxybenzoate)
Class : 5.2
Packing group : Not assigned by regulation
Labels : 5.2

IATA-DGR

UN/ID No. : UN 3103
Proper shipping name : Organic peroxide type C, liquid (Organic peroxide, liquid, sample)
(Acetylacetone peroxide, tert-Butyl peroxybenzoate)
Class : 5.2
Packing group : Not assigned by regulation

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Labels : Organic Peroxides, Keep Away From Heat
 Packing instruction (cargo aircraft) : 570
 Packing instruction (passenger aircraft) : 570

IMDG-Code

UN number : UN 3105
 Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID
 (Acetylacetone peroxide, tert-Butyl peroxybenzoate)
 Class : 5.2
 Packing group : Not assigned by regulation
 Labels : 5.2
 EmS Code : F-J, S-R
 Marine pollutant : no
 Remarks : CA-2008110011(ILT/RW/VV/15-4580)

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

Not applicable for product as supplied.

National Regulations

GB 6944/12268

UN number : UN 3105
 Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID
 (Acetylacetone peroxide, tert-Butyl peroxybenzoate)
 Class : 5.2
 Packing group : Not assigned by regulation
 Labels : 5.2
 Remarks : -

Special precautions for user

Remarks : -

The transport classification(s) provided herein are for informational purposes only. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

15. REGULATORY INFORMATION

National regulatory information

Law on the Prevention and Control of Occupational Diseases

Regulations on Safety Management of Hazardous Chemicals

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Catalogue of Hazardous Chemicals : Listed

Identification of Major Hazard Installations for Hazardous Chemicals (GB 18218)

No. / Code	Chemical name / Category	Threshold quantity
W7.2	Organic peroxides	50 t

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

TCSI	: On the inventory, or in compliance with the inventory
TSCA	: All substances listed as active on the TSCA inventory
AIIIC	: On the inventory, or in compliance with the inventory
DSL	: All components of this product are on the Canadian DSL
ENCS	: On the inventory, or in compliance with the inventory
ISHL	: 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
NZIoC	: On the inventory, or in compliance with the inventory
TECI	: Not in compliance with the inventory

16. OTHER INFORMATION

Revision Date : 2022/12/26

Further information

Other information : This data sheet contains changes from the previous version in section(s):
 Hazards identification
 Composition/information on ingredients
 Toxicological information

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Date format : yyyy/mm/dd

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
 CN OEL : Occupational exposure limits for hazardous agents in the workplace - Chemical hazardous agents.

ACGIH / TWA : 8-hour, time-weighted average
 ACGIH / STEL : Short-term exposure limit
 CN OEL / PC-TWA : Permissible concentration - time weighted average
 CN OEL / PC-STEEL : Permissible concentration - short term exposure limit

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

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Disclaimer

This safety datasheet only contains information relating to safety and does not replace any product information or product specification.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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