

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006, as amended by
Commission Regulation (EU) 2020/878



NOROX[®]FC-100

Version	Revision Date:	SDS Number:	Date of last issue: 09.03.2023
2.3	06.06.2024	600000000132	Date of first issue: 12.04.2016

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

1.1 Product identifier

Trade name : NOROX[®]FC-100

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

Use of the Sub-
stance/Mixture : Hardener

1.3 Details of the supplier of the safety data sheet

Company : United Initiators GmbH
Dr.-Gustav-Adolph-Str. 3
82049 Pullach

Telephone : +49 / 89 / 74422 – 0

E-mail address of person
responsible for the SDS : contact@united-in.com

1.4 Emergency telephone number

+44 1235 239670

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Organic peroxides, Type D	H242: Heating may cause a fire.
Eye irritation, Category 2	H319: Causes serious eye irritation.
Skin sensitisation, Category 1	H317: May cause an allergic skin reaction.
Reproductive toxicity, Category 2	H361: Suspected of damaging fertility or the un-born child.
Specific target organ toxicity - single exposure, Category 3, Respiratory system	H335: May cause respiratory irritation.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)


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Hazard pictograms : 

Signal word : Danger

Hazard statements : H242 Heating may cause a fire.
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.

Precautionary statements : **Prevention:**
P201 Obtain special instructions before use.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P234 Keep only in original packaging.
P261 Avoid breathing mist or vapours.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

Hazardous components which must be listed on the label:
3,5-dimethyl-1,2-dioxolane-3,5-diol (CAS-No. 13784-51-5)
Diacetone alcohol (CAS-No. 123-42-2)
tert-Butyl perbenzoate (CAS-No. 614-45-9)

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.2 Mixtures

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Chemical nature : Organic Peroxide
Liquid mixture

Components

Chemical name	CAS-No. EC-No. Index-No. Registration number	Classification	Concentration (% w/w)
3,5-dimethyl-1,2-dioxolane-3,5-diol	13784-51-5 237-438-9 01-2119965139-28-0005	Org. Perox. D; H242 Eye Irrit. 2; H319 Skin Sens. 1; H317	>= 25 - < 30
Diacetone alcohol	123-42-2 204-626-7 603-016-00-1 01-2119473975-21	Eye Irrit. 2; H319 Repr. 2; H361 STOT SE 3; H335 (Respiratory system) specific concentration limit Eye Irrit. 2; H319 >= 10 %	>= 25 - < 30
tert-Butyl perbenzoate	614-45-9 210-382-2 01-2119513317-46-0003	Org. Perox. C; H242 Acute Tox. 4; H332 Skin Irrit. 2; H315 Skin Sens. 1; H317 Aquatic Acute 1; H400 Aquatic Chronic 3; H412 M-Factor (Acute aquatic toxicity): 1 Acute toxicity esti- mate Acute inhalation tox- icity (dust/mist): 1.01 mg/l	>= 7.5 - < 10
Acetylacetone	123-54-6 204-634-0 606-029-00-0 01-2119458968-15	Flam. Liq. 3; H226 Acute Tox. 4; H302 Acute Tox. 3; H331 Acute Tox. 3; H311 Acute toxicity esti- mate Acute oral toxicity: 570 mg/kg Acute inhalation tox-	>= 1 - < 5

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		icity (vapour): 5.1 mg/l Acute dermal toxicity: 790 mg/kg	
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For explanation of abbreviations see section 16.

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Take off contaminated clothing and shoes immediately.
Call a physician immediately.
Never give anything by mouth to an unconscious person.
If unconscious, place in recovery position and seek medical advice.
Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
Symptoms of poisoning may appear several hours later.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
- If inhaled : Administer oxygen if breathing is difficult or cyanosis is observed.
If breathed in, move person into fresh air.
If not breathing, give artificial respiration.
Call a physician or poison control centre immediately.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
- In case of skin contact : If symptoms persist, call a physician.
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash contaminated clothing before re-use.
If on skin, rinse well with water.
If on clothes, remove clothes.
- In case of eye contact : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

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If swallowed : Call a physician immediately.
Rinse mouth thoroughly with water.
Keep respiratory tract clear.
If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : sensitising effects

Risks : May cause an allergic skin reaction.
Causes serious eye irritation.
May cause respiratory irritation.
Suspected of damaging fertility or the unborn child.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically and supportively.

SECTION 5: Firefighting measures

5.1 Extinguishing media

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

Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

Specific hazards during fire-fighting : Risk of explosion if heated under confinement.
Possible emission of gaseous decomposition products may lead to a dangerous pressure build-up.
Avoid confinement.
Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may auto-ignite.
The product burns violently.
Flash back possible over considerable distance.
Do not allow run-off from fire fighting to enter drains or water courses.
Vapours may form explosive mixtures with air.
The product will float on water and can be reignited on surface water.
Cool closed containers exposed to fire with water spray.

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5.3 Advice for firefighters

- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.
- Specific extinguishing methods : Do not use a solid water stream as it may scatter and spread fire.
Remove undamaged containers from fire area if it is safe to do so.
Use water spray to cool unopened containers.
- Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use a water spray to cool fully closed 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.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Personal precautions : Follow safe handling advice and personal protective equipment recommendations.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Use personal protective equipment.
Remove all sources of ignition.
Never return spills in original containers for re-use.
Treat recovered material as described in the section "Disposal considerations".

6.2 Environmental precautions

- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

- Methods for cleaning up : Contact with incompatible substances can cause decomposition at or below SADT.
Clear spills immediately.
Suppress (knock down) gases/vapours/mists with a water spray jet.
To clean the floor and all objects contaminated by this material, use plenty of water.
Soak up with inert absorbent material.
Isolate waste and do not reuse.

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Non-sparking tools should be used.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Advice on safe handling : Open drum carefully as content may be under pressure.
Protect from contamination.
Do not swallow.
Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
Avoid formation of aerosol.
Take precautionary measures against static discharges.
Never return any product to the container from which it was originally removed.
Provide sufficient air exchange and/or exhaust in work rooms.
Avoid confinement.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Smoking, eating and drinking should be prohibited in the application area.
Wash thoroughly after handling.
For personal protection see section 8.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.
- Advice on protection against fire and explosion : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapours). Keep away from heat and sources of ignition. Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition. Keep away from combustible material. Do not spray on a naked flame or any incandescent material.
- Hygiene measures : Avoid contact with skin, eyes and clothing. Keep away from food and drink. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

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7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers : Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Store in cool place. Contamination may result in dangerous pressure increases - closed containers may rupture. Observe label precautions. Store in accordance with the particular national regulations. Avoid impurities (e.g. rust, dust, ash), risk of decomposition. Electrical installations / working materials must comply with the technological safety standards. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Advice on common storage : Keep away from combustible materials. Keep away from strong acids, bases, heavy metal salts and other reducing substances.

Recommended storage temperature : 0 - 25 °C

Further information on storage stability : Stable under recommended storage conditions.

7.3 Specific end use(s)

Specific use(s) : For further information, refer to the product technical data sheet.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Diacetone alcohol	123-42-2	OELV - 8 hrs (TWA)	50 ppm 240 mg/m ³	IE OEL
Acetylacetone	123-54-6	OELV - 8 hrs (TWA)	25 ppm	IE OEL

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

Substance name	End Use	Exposure routes	Potential health effects	Value
3,5-dimethyl-1,2-dioxolane-3,5-diol	Workers	Inhalation	Long-term systemic effects	11.75 mg/m ³
	Workers	Skin contact	Long-term systemic effects	13.33 mg/kg bw/day
tert-Butyl perbenzoate	Workers	Inhalation	Long-term systemic effects	24.7 mg/m ³
	Workers	Skin contact	Long-term systemic effects	17.5 mg/kg bw/day

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Diacetone alcohol	Workers	Inhalation	Acute local effects	240 mg/m ³
	Workers	Skin contact	Long-term systemic effects	9.4 mg/kg bw/day
	Workers	Inhalation	Long-term systemic effects	66.4 mg/m ³
	Workers	Inhalation	Long-term local effects	66.4 mg/m ³
Acetylacetone	Workers	Inhalation		84 mg/m ³
	Workers	Skin contact		12 mg/kg bw/day

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

Substance name	Environmental Compartment	Value
3,5-dimethyl-1,2-dioxolane-3,5-diol	Fresh water	0.054 mg/l
	Marine water	0.0054 mg/l
	Intermittent use/release	0.054 mg/l
	Fresh water sediment	0.48 mg/kg
	Marine sediment	0.048 mg/kg
	Sewage treatment plant	6.2 mg/l
tert-Butyl perbenzoate	Soil	0.065 mg/kg
	Fresh water	0.01 mg/l
	Marine water	0.00101 mg/l
	Intermittent use/release	0.008 mg/l
	Sewage treatment plant	0.6 mg/l
	Fresh water sediment	0.28 mg/kg
Diacetone alcohol	Marine sediment	0.028 mg/kg
	Soil	0.049 mg/kg
	Fresh water	2 mg/l
	Marine water	0.2 mg/l
	Sewage treatment plant	82 mg/l
	Fresh water sediment	9.06 mg/kg dry weight (d.w.)
Acetylacetone	Marine sediment	0.91 mg/kg dry weight (d.w.)
	Soil	0.63 mg/kg dry weight (d.w.)
	Fresh water	0.026 mg/l
	Marine water	0.0026 mg/l
	Sewage treatment plant	1.32 mg/l
	Fresh water sediment	0.155 mg/kg wet weight
Acetylacetone	Marine sediment	0.0155 mg/kg wet weight
	Soil	0.01582 mg/kg wet weight

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8.2 Exposure controls

Engineering measures

Minimize workplace exposure concentrations.

Personal protective equipment

Eye/face protection : Ensure that eyewash stations and safety showers are close to the workstation location.
Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.
Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.
Tightly fitting safety goggles
Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.

Equipment should conform to EN 166

Hand protection

Material : Nitrile rubber
Break through time : 120 min
Glove thickness : 0.40 mm
Directive : Equipment should conform to EN 374

Material : butyl-rubber
Break through time : 480 min
Glove thickness : 0.47 mm
Directive : Equipment should conform to EN 374

Directive : Equipment should conform to EN 374

Remarks : The data about break through time/strength of material are standard values! The exact break through time/strength of material has to be obtained from the producer of the protective glove. Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces.
Wear as appropriate:
Flame retardant antistatic protective clothing.

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Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.
Respirator with combination filter for vapour/particulate (EN 141)

Filter type : ABEK-filter

Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state : liquid

Colour : Colorless to pale yellow

Odour : mild

Odour Threshold : not determined

Melting point/range : No data available

Boiling point/boiling range : No data available

Flammability : Not applicable
Remarks: Organic peroxide

Upper explosion limit / Upper flammability limit : Upper explosion limit
No data available

Lower explosion limit / Lower flammability limit : Lower explosion limit
No data available

Flash point : 65 °C

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Method: closed cup

Auto-ignition temperature : not determined

Self-Accelerating decomposition temperature (SADT) : 60 °C
SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.

pH : No data available

Viscosity
Viscosity, dynamic : not determined

Viscosity, kinematic : No data available

Solubility(ies)
Water solubility : slightly soluble

Partition coefficient: n-octanol/water : Not applicable

Vapour pressure : not determined

Relative density : not determined

Density : ca. 1.1 g/cm³

Relative vapour density : not determined

9.2 Other information

Explosives : Not explosive
In use, may form flammable/explosive vapour-air mixture.

Oxidizing properties : The substance or mixture is not classified as oxidizing.
Organic peroxide

Self-ignition : The substance or mixture is not classified as pyrophoric.

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- Self-heating substances : The substance or mixture is not classified as self heating.
- Substances and mixtures, which in contact with water, emit flammable gases : The substance or mixture does not emit flammable gases in contact with water.
- Desensitised explosives : Not applicable
- Evaporation rate : No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

Stable under recommended storage conditions.
Heating may cause a fire or explosion.

10.2 Chemical stability

Stable under recommended storage conditions.
No decomposition if stored normally.

10.3 Possibility of hazardous reactions

Hazardous reactions : Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid : Protect from contamination.
Contact with incompatible substances can cause decomposition at or below SADT.
Heat, flames and sparks.
Avoid confinement.

10.5 Incompatible materials

Materials to avoid : Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents

10.6 Hazardous decomposition products

Irritant, caustic, flammable, noxious/toxic gases and vapours can develop in the case of fire and decomposition

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SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity : Acute toxicity estimate: > 2,000 mg/kg
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 20 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity : Acute toxicity estimate: > 2,000 mg/kg
Method: Calculation method

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

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

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

Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg
Method: Expert judgement
Assessment: The substance or mixture has no acute dermal toxicity

Diacetone alcohol:

Acute oral toxicity : LD50 (Rat): 3,002 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC0 (Rat, male and female): >= 7.6 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403
Assessment: The substance or mixture has no acute inhalation toxicity
Remarks: No mortality observed at this dose.

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Acute dermal toxicity : LD0 (Rat): > 1,875 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity
Remarks: No mortality observed at this dose.

tert-Butyl perbenzoate:

Acute oral toxicity : LD0 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 423
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): 1.01 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: OECD Test Guideline 436

Acute dermal toxicity : LD0 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Acetylacetone:

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

Acute inhalation toxicity : LC50 (Rat): 5.1 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

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

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product:

Remarks : May cause skin irritation and/or dermatitis.

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

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

Diacetone alcohol:

Species : Rabbit
Method : OECD Test Guideline 404

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Result : No skin irritation

tert-Butyl perbenzoate:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Skin irritation

Acetylacetone:

Species : Rabbit
Result : No skin irritation

Serious eye damage/eye irritation

Causes serious eye irritation.

Product:

Remarks : May cause irreversible eye damage.

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

Species : Rabbit
Method : OECD Test Guideline 405
Result : Eye irritation

Diacetone alcohol:

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

tert-Butyl perbenzoate:

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

Acetylacetone:

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

May cause an allergic skin reaction.

Respiratory sensitisation

Not classified due to lack of data.

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Product:

Remarks : Causes sensitisation.

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

Test Type : Maximisation Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : Probability or evidence of skin sensitisation in humans

Remarks : Causes sensitisation.

Diacetone alcohol:

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

tert-Butyl perbenzoate:

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

Acetylacetone:

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

Germ cell mutagenicity

Not classified due to lack of data.

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: positive

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Genotoxicity in vivo : Test Type: In vivo micronucleus test
Species: Mouse (male and female)
Application Route: Intraperitoneal injection
Method: OECD Test Guideline 474

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Result: negative

Diacetone alcohol:

Genotoxicity in vitro : Method: OECD Test Guideline 476
Result: negative

Method: OECD Test Guideline 471
Result: negative

Method: OECD Test Guideline 473
Result: negative

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

Germ cell mutagenicity- Assessment : Tests on bacterial or mammalian cell cultures did not show
mutagenic effects.

tert-Butyl perbenzoate:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: positive

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: positive

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: positive

Test Type: Mouse Lymphoma
Result: positive

Genotoxicity in vivo : Test Type: Micronucleus test
Species: Mouse (male and female)
Application Route: Oral
Result: negative

Acetylacetone:

Genotoxicity in vitro : Method: OECD Test Guideline 471
Result: negative

Method: OECD Test Guideline 479
Result: positive

Method: OECD Test Guideline 473
Result: positive

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	Method: OECD Test Guideline 476 Result: negative
Genotoxicity in vivo	: Method: OECD Test Guideline 474 Result: positive
	Method: OECD Test Guideline 483 Result: negative
	Method: OECD Test Guideline 475 Result: negative
	Method: OECD Test Guideline 478 Result: Equivocal
	Test Type: DNA Repair Species: Rat Application Route: Oral Result: negative
	Species: Rat Application Route: inhalation (vapour) Method: OPPTS 870.5395 Result: negative

Carcinogenicity

Not classified due to lack of data.

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

Remarks : This information is not available.

Diacetone alcohol:

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen

tert-Butyl perbenzoate:

Remarks : This information is not available.

Reproductive toxicity

Suspected of damaging fertility or the unborn child.

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

Effects on fertility : Remarks: No data available

Effects on foetal develop- : Remarks: No data available

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ment

Diacetone alcohol:

- Effects on fertility : Species: Rat
Application Route: oral (gavage)
General Toxicity - Parent: NOAEL: 300 mg/kg body weight
General Toxicity F1: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 422
- Effects on foetal development : Species: Rat
Application Route: inhalation (vapour)
General Toxicity Maternal: NOAEL: 4.106
Embryo-foetal toxicity: NOAEL: 12,292
Method: OECD Test Guideline 414
- Reproductive toxicity - Assessment : Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

tert-Butyl perbenzoate:

- Effects on fertility : Species: Rat
Application Route: Oral
General Toxicity - Parent: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 421
- Effects on foetal development : Species: Rat
Application Route: Oral
General Toxicity Maternal: NOAEL: 300 mg/kg body weight
Method: OECD Test Guideline 414

Acetylacetone:

- Effects on foetal development : Species: Rat
Application Route: inhalation (vapour)
Duration of Single Treatment: 13 d
General Toxicity Maternal: NOAEC: 200
Teratogenicity: NOAEC Parent: 400
Embryo-foetal toxicity: NOAEC F1: 50
Method: OECD Test Guideline 414
- Species: Rat
Application Route: inhalation (vapour)
Duration of Single Treatment: 13 d
General Toxicity Maternal: LOAEC: 400
Embryo-foetal toxicity: LOAEC F1: 200
Method: OECD Test Guideline 414

STOT - single exposure

May cause respiratory irritation.

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Components:

Diacetone alcohol:

Target Organs : Respiratory system
Assessment : May cause respiratory irritation.

STOT - repeated exposure

Not classified due to lack of data.

Repeated dose toxicity

Components:

Diacetone alcohol:

Species : Rat
NOAEL : 1.04 mg/l
LOAEL : 4.685 mg/l
Application Route : inhalation (vapour)
Exposure time : 6 w
Method : OECD Test Guideline 412

Species : Rat
NOAEL : 100 mg/kg
Application Route : oral (gavage)
Method : OECD Test Guideline 422

Acetylacetone:

Species : Rat
NOAEL : 200 mg/kg
LOAEL : 805 mg/kg
Application Route : inhalation (vapour)
Exposure time : 9 d

Species : Rat
NOAEL : 100 mg/kg
Application Route : inhalation (vapour)
Exposure time : 90 d
Method : OECD Test Guideline 413

Species : Rabbit
NOAEL : 244 mg/kg
LOAEL : 975 mg/kg
Application Route : Dermal
Exposure time : 9 d

Aspiration toxicity

Not classified due to lack of data.

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Components:

Acetylacetone:

No aspiration toxicity classification

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Further information

Product:

Remarks : No data available

Components:

Acetylacetone:

Remarks : Solvents may degrease the skin.

SECTION 12: Ecological information

12.1 Toxicity

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

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
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 7.05 mg/l Exposure time: 48 h Method: OECD Test Guideline 202
Toxicity to algae/aquatic plants	:	EC50 (Pseudokirchneriella subcapitata (green algae)): 5.36 mg/l Exposure time: 72 h Method: OECD Test Guideline 201
Toxicity to microorganisms	:	EC50 : 614 mg/l

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Exposure time: 3 h
Method: OECD Test Guideline 209

Diacetone alcohol:

Toxicity to fish : LC50 (*Oryzias latipes* (Orange-red killifish)): > 100 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): > 1,000 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EbC50 (*Pseudokirchneriella subcapitata* (green algae)): > 1,000 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (*Pseudokirchneriella subcapitata* (green algae)): 1,000 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

tert-Butyl perbenzoate:

Toxicity to fish : LC50 (*Danio rerio* (zebra fish)): 1.6 mg/l
Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (*Daphnia magna* (Water flea)): 11 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (*Pseudokirchneriella subcapitata* (green algae)): 0.8 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (*Pseudokirchneriella subcapitata* (green algae)): 0.72 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : 1

Toxicity to microorganisms : EC50 : 43 mg/l
Exposure time: 0.5 h
Method: OECD Test Guideline 209

Toxicity to daphnia and other aquatic invertebrates (Chron- : EC10: 0.49 mg/l
Exposure time: 21 d

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ic toxicity) Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

Acetylacetone:

Toxicity to fish : LC50 (Fish): 104 mg/l
Exposure time: 96 h

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

Toxicity to algae/aquatic : EC50 (Pseudokirchneriella subcapitata (green algae)): 83.22
plants mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 3.2
mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 : 107.6 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

EC10 : 13.2 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Toxicity to fish (Chronic tox- : NOEC: 10 mg/l
icity) Exposure time: 34 d
Species: Pimephales promelas (fathead minnow)
Method: OECD Test Guideline 210

LOEC: 22 mg/l
Exposure time: 34 d
Species: Pimephales promelas (fathead minnow)
Method: OECD Test Guideline 210

Toxicity to daphnia and other : NOEC: 18 mg/l
aquatic invertebrates (Chron- Exposure time: 21 d
ic toxicity) Species: Daphnia magna (Water flea)
Method: OECD Test Guideline 211

12.2 Persistence and degradability

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

Biodegradability : Result: Readily biodegradable.

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Method: OECD Test Guideline 301D

Diacetone alcohol:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301

tert-Butyl perbenzoate:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301D

Acetylacetone:

Biodegradability : Result: Readily biodegradable.
Method: OECD Test Guideline 301C

12.3 Bioaccumulative potential

Components:

3,5-dimethyl-1,2-dioxolane-3,5-diol:

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

Diacetone alcohol:

Partition coefficient: n- : log Pow: -0.09 (20 °C)
octanol/water

tert-Butyl perbenzoate:

Partition coefficient: n- : log Pow: 2.89 (25 °C)
octanol/water

Acetylacetone:

Bioaccumulation : Bioconcentration factor (BCF): 3.16
Remarks: Calculation

Partition coefficient: n- : log Pow: 0.68 (40 °C)
octanol/water

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of

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0.1% or higher.

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

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

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : Dispose of wastes in an approved waste disposal facility.
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.

According to the European Waste Catalogue, Waste Codes are not product specific, but application specific.
Waste codes should be assigned by the user, preferably in discussion with the waste disposal authorities.

Contaminated packaging : Dispose of in accordance with local regulations.
Clean container with water.
Dispose of contents/ container to an approved waste disposal plant.
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

14.1 UN number or ID number

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ADR : UN 3105

IMDG : UN 3105

14.2 UN proper shipping name

ADR : ORGANIC PEROXIDE TYPE D, LIQUID
(ACETYL ACETONE PEROXIDE, tert-BUTYL
PEROXYBENZOATE)

IMDG : ORGANIC PEROXIDE TYPE D, LIQUID
(ACETYL ACETONE PEROXIDE, tert-BUTYL
PEROXYBENZOATE)

14.3 Transport hazard class(es)

	Class	Subsidiary risks
ADR	: 5.2	
IMDG	: 5.2	

14.4 Packing group

ADR
Packing group : Not assigned by regulation
Classification Code : P1
Labels : 5.2
Tunnel restriction code : (D)

IMDG
Packing group : Not assigned by regulation
Labels : 5.2
EmS Code : F-J, S-R

14.5 Environmental hazards

ADR
Environmentally hazardous : no

IMDG
Marine pollutant : no

14.6 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.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

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SECTION 15: Regulatory information

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles (Annex XVII) : Conditions of restriction for the following entries should be considered: Number on list 75, 3

If you intend to use this product as tattoo ink, please contact your vendor.

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

Regulation (EU) 2019/1021 on persistent organic pollutants (recast) : Not applicable

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals : Not applicable

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. P6b SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES

Other regulations:

Gefahrgruppe nach TRGS 741: II (German regulatory requirements)

Take note of Directive 92/85/EEC regarding maternity protection or stricter national regulations, where applicable.

Take note of Directive 94/33/EC on the protection of young people at work or stricter national regulations, where applicable.

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

TCSI (TW) : On the inventory, or in compliance with the inventory

TSCA (US) : All substances listed as active on the TSCA inventory

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AIIC (AU)	:	On the inventory, or in compliance with the inventory
DSL (CA)	:	All components of this product are on the Canadian DSL
ENCS (JP)	:	On the inventory, or in compliance with the inventory
ISHL (JP)	:	On the inventory, or in compliance with the inventory
KECI (KR)	:	On the inventory, or in compliance with the inventory
PICCS (PH)	:	On the inventory, or in compliance with the inventory
IECSC (CN)	:	On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment

This information is not available.

SECTION 16: Other information

Further information

Other information : This safety datasheet only contains information relating to safety and does not replace any product information or product specification.
These safety instructions also apply to empty packaging which may still contain product residues.
The hazards on the label also apply to residues in the container.

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Classification of the mixture:

Org. Perox. D	H242
Eye Irrit. 2	H319
Skin Sens. 1	H317
Repr. 2	H361
STOT SE 3	H335

Classification procedure:

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

Full text of H-Statements

H226 : Flammable liquid and vapour.

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H242	: Heating may cause a fire.
H302	: Harmful if swallowed.
H311	: Toxic in contact with skin.
H315	: Causes skin irritation.
H317	: May cause an allergic skin reaction.
H319	: Causes serious eye irritation.
H331	: Toxic if inhaled.
H332	: Harmful if inhaled.
H335	: May cause respiratory irritation.
H361	: Suspected of damaging fertility or the unborn child.
H400	: Very toxic to aquatic life.
H412	: Harmful to aquatic life with long lasting effects.

Full text of other abbreviations

Acute Tox.	: Acute toxicity
Aquatic Acute	: Short-term (acute) aquatic hazard
Aquatic Chronic	: Long-term (chronic) aquatic hazard
Eye Irrit.	: Eye irritation
Flam. Liq.	: Flammable liquids
Org. Perox.	: Organic peroxides
Repr.	: Reproductive toxicity
Skin Irrit.	: Skin irritation
Skin Sens.	: Skin sensitisation
STOT SE	: Specific target organ toxicity - single exposure
IE OEL	: List of Chemical Agents and Carcinogens with Occupational Exposure Limit Values - Code of Practice, Schedule 1 and 2
IE OEL / OELV - 8 hrs (TWA)	: Occupational exposure limit value (8-hour reference period)

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; 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; 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; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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 sub-

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stance; 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; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of Very High Concern; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Disclaimer

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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