

# SAFETY DATA SHEET

according to the Hazardous Products Regulations



## NOROX<sup>®</sup>AZOX

Version	Revision Date:	SDS Number:	Date of last issue: 06/27/2022
2.2	05/13/2024	600000000076	Date of first issue: 12/16/2016

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### SECTION 1. IDENTIFICATION

Trade name : NOROX<sup>®</sup>AZOX  
Other means of identification : No data available

#### Manufacturer or supplier's details

Company name of supplier : United Initiators, Inc.

Address : 555 Garden Street  
Elyria OH 44035 USA

United Initiators Canada Ltd.  
2147 PG Pulp Mill Road  
Prince George, BC-V2N 2S6 CANADA

Telephone : +1-440-323-3112

Telefax : +1-440-323-2659

Emergency telephone : CHEMTREC US (24h): +1-800-424-9300  
CHEMTREC WORLD (24h): +1-703-527-3887  
CANUTEC (24h): 1-613-996-6666

For Transportation Incidents : TERRAPURE EMERGENCY RESPONSE SERVICES (24h):  
1-800-567-7455

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

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

Recommended use : polymerization initiators

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### SECTION 2. HAZARDS IDENTIFICATION

#### GHS classification in accordance with the Hazardous Products Regulations

Flammable liquids : Category 4  
Organic peroxides : Type D  
Skin irritation : Category 2  
Eye irritation : Category 2A

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Skin sensitization : Category 1  
Reproductive toxicity : Category 1B  
Specific target organ toxicity : Category 3 (Respiratory system)  
- single exposure  
Short-term (acute) aquatic hazard : Category 2

### GHS label elements

Hazard pictograms : 

Signal Word : Danger

Hazard Statements : H227 Combustible liquid.  
H242 Heating may cause a fire.  
H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H319 Causes serious eye irritation.  
H335 May cause respiratory irritation.  
H360 May damage fertility or the unborn child.  
H401 Toxic to aquatic life.

Precautionary Statements : **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, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P234 Keep only in original packaging.  
P240 Ground and bond container and receiving equipment.  
P261 Avoid breathing mist or vapors.  
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/ hearing 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

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for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P308 + P313 IF exposed or concerned: Get medical advice/ attention.

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.

P411 Store at temperatures not exceeding < 100 °F/ < 38 °C.

P420 Store separately.

### 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

Chemical nature : Organic Peroxide  
Liquid mixture

### Components

Chemical name	Common Name/Synonym	CAS-No.	Concentration (% w/w)
2,4-Pentanedione, peroxide	2,4-Pentanedione, peroxide	37187-22-7	>= 30 - < 35 *
N-Methyl-2-pyrrolidone	N-Methyl-2-pyrrolidone	872-50-4	>= 25 - < 30 *
Acetylacetone	Acetylacetone	123-54-6	>= 1 - < 5 *
Hydrogen peroxide	Hydrogen peroxide	7722-84-1	>= 1 - < 5 *

\* Actual concentration or concentration range is withheld as a trade secret

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### SECTION 4. 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 material safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.  
Symptoms of poisoning may appear several hours later.
- 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.  
If unconscious, place in recovery position and seek medical advice.  
Keep respiratory tract clear.  
If symptoms persist, call a physician.
- 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.
- If swallowed : Call a physician immediately.  
Rinse mouth thoroughly with water.  
Keep respiratory tract clear.  
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Causes skin irritation.  
May cause an allergic skin reaction.  
Causes serious eye irritation.  
May cause respiratory irritation.

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May damage fertility or the unborn child.  
sensitizing effects

Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing

Notes to physician : Treat symptomatically and supportively.

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### SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Water spray jet  
Alcohol-resistant foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical

Unsuitable extinguishing media : High volume water jet

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.  
Vapors may form explosive mixtures with air.  
Cool closed containers exposed to fire with water spray.

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.

Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.  
Use personal protective equipment.

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### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Follow safe handling advice and personal protective equipment recommendations.  
Beware of vapors accumulating to form explosive concentrations. Vapors 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".
- 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 : Contact with incompatible substances can cause decomposition at or below SADT.  
Clear spills immediately.  
Suppress (knock down) gases/vapors/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.  
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.

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### SECTION 7. HANDLING AND STORAGE

- Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.
- Advice on protection against fire and explosion : Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors).  
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.
- Advice on safe handling : Open drum carefully as content may be under pressure.  
Protect from contamination.

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Do not swallow.  
Do not breathe vapors/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 sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Conditions for safe storage : 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.

Materials to avoid : Keep away from combustible materials.  
Keep away from strong acids, bases, heavy metal salts and other reducing substances.

Recommended storage temperature : < 38 °C

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

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### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
N-Methyl-2-pyrrolidone	872-50-4	TWA	400 mg/m <sup>3</sup>	CA ON OEL
Acetylacetone	123-54-6	TWA	25 ppm	ACGIH
Hydrogen peroxide	7722-84-1	TWA	1 ppm 1.4 mg/m <sup>3</sup>	CA AB OEL
		TWA	1 ppm	CA BC OEL
		TWAEV	1 ppm	CA QC OEL
		TWA	1 ppm	ACGIH

#### Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sampling time	Permissible concentration	Basis
N-Methyl-2-pyrrolidone	872-50-4	5-Hydroxy-N-methyl-2-pyrrolidone	Urine	End of shift (As soon as possible after exposure ceases)	100 mg/l	ACGIH BEI

**Engineering measures** : Minimize workplace exposure concentrations.

#### Personal protective equipment

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Filter type : ABEK-filter

Use NIOSH approved respiratory protection.

#### Hand protection

Material : butyl-rubber

Break through time : ≤ 480 min

Glove thickness : 0.5 mm

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



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- gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.
- Eye 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.
- 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.
- Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
- 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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### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : liquid
- Color : colorless
- Odor : characteristic
- pH : No data available

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Melting point/range : No data available

Boiling point/boiling range : Decomposition: Decomposes below the boiling point.

Flash point : 77 °C  
Method: closed cup

Flammability (solid, gas) : Not applicable

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapor pressure : No data available

Relative vapor density : > 1

Density : 1.1 g/cm<sup>3</sup>

Solubility(ies)  
Water solubility : soluble

Partition coefficient: n-octanol/water : No data available

Self-Accelerating decomposition temperature (SADT) : 60 °C  
Method: UN-Test H.4  
SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.

Viscosity  
Viscosity, dynamic : No data available

Explosive properties : Not explosive

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### SECTION 10. STABILITY AND REACTIVITY

Reactivity : Stable under recommended storage conditions.

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		Heating may cause a fire or explosion.
Chemical stability	:	Stable under recommended storage conditions. No decomposition if stored normally.
Possibility of hazardous reactions	:	Vapors may form explosive mixture with air.
Conditions to avoid	:	Protect from contamination. Contact with incompatible substances can cause decomposition at or below SADT. Heat, flames and sparks. Avoid confinement.
Incompatible materials	:	Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents
Hazardous decomposition products	:	Irritant, caustic, flammable, noxious/toxic gases and vapours can develop in the case of fire and decomposition  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

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

#### Components:

##### **2,4-Pentanedione, peroxide:**

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 judgment

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Assessment: The substance or mixture has no acute inhalation toxicity

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

### **N-Methyl-2-pyrrolidone:**

Acute oral toxicity : LD50 (Rat): 4,150 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): > 5.1 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  
Remarks: No mortality observed at this dose.

Acute dermal toxicity : LD50 (Rat): > 5,000 mg/kg  
Method: OECD Test Guideline 402  
Remarks: No mortality observed at this dose.

### **Acetylacetone:**

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

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

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

### **Hydrogen peroxide:**

Acute oral toxicity : LD50 (Rat, male and female): 431 mg/kg  
Method: Expert judgment  
Assessment: The component/mixture is moderately toxic after single ingestion.

Acute inhalation toxicity : Acute toxicity estimate: 1.5 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Assessment: The component/mixture is moderately toxic after short term inhalation.  
Remarks: Based on harmonised classification in EU regulation 1272/2008, Annex VI

Acute dermal toxicity : LD50 (Rabbit): 9,200 mg/kg

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Remarks: No adverse effect has been observed in acute toxicity tests.

### **Skin corrosion/irritation**

Causes skin irritation.

#### **Product:**

Remarks : May cause skin irritation in susceptible persons.

#### **Components:**

##### **2,4-Pentanedione, peroxide:**

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

##### **N-Methyl-2-pyrrolidone:**

Species : Rabbit  
Method : OECD Test Guideline 404  
Result : Irritating to skin.

##### **Acetylacetone:**

Species : Rabbit  
Result : No skin irritation

##### **Hydrogen peroxide:**

Result : Corrosive after 3 minutes or less of exposure

### **Serious eye damage/eye irritation**

Causes serious eye irritation.

#### **Product:**

Remarks : May cause irreversible eye damage.

#### **Components:**

##### **2,4-Pentanedione, peroxide:**

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

##### **N-Methyl-2-pyrrolidone:**

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

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### Acetylacetone:

Species : Rabbit  
Result : No eye irritation

### Hydrogen peroxide:

Result : Irreversible effects on the eye  
Remarks : Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), 35%

### Respiratory or skin sensitization

#### Skin sensitization

May cause an allergic skin reaction.

#### Respiratory sensitization

Not classified due to lack of data.

#### Product:

Remarks : Causes sensitization.

#### Components:

##### 2,4-Pentanedione, peroxide:

Test Type : Maximization Test  
Routes of exposure : Skin contact  
Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : Probability or evidence of skin sensitization in humans  
Remarks : Causes sensitization.

##### N-Methyl-2-pyrrolidone:

Species : Mouse  
Method : OECD Test Guideline 429  
Result : Does not cause skin sensitization.  
Remarks : Based on data from similar materials

### Acetylacetone:

Routes of exposure : Skin contact  
Species : Mouse  
Method : OECD Test Guideline 429  
Result : Does not cause skin sensitization.

### Germ cell mutagenicity

Not classified due to lack of data.

#### Components:

##### 2,4-Pentanedione, peroxide:

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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  
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

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 (vapor)  
Method: OPPTS 870.5395  
Result: negative

### Hydrogen peroxide:

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Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)  
Result: negative  
positive  
Remarks: Information taken from reference works and the literature.

Test Type: Chromosome aberration test in vitro  
Method: OECD Test Guideline 473  
Result: positive  
Remarks: Information taken from reference works and the literature.

Genotoxicity in vivo : Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)  
Species: Mouse (male and female)  
Method: OECD Test Guideline 474  
Result: negative  
Remarks: Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), 35%

Germ cell mutagenicity - Assessment : Based on available data, the classification criteria are not met.

### **Carcinogenicity**

Not classified due to lack of data.

### **Components:**

#### **2,4-Pentanedione, peroxide:**

Remarks : This information is not available.

#### **Hydrogen peroxide:**

Carcinogenicity - Assessment : Carcinogenicity classification not possible from current data.

### **Reproductive toxicity**

May damage fertility or the unborn child.

### **Components:**

#### **2,4-Pentanedione, peroxide:**

Effects on fertility : Remarks: No data available

Effects on fetal development : Remarks: No data available

#### **N-Methyl-2-pyrrolidone:**

Reproductive toxicity - Assessment : Clear evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments

### **Acetylacetone:**



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

Species: Rat  
Application Route: inhalation (vapor)  
Duration of Single Treatment: 13 d  
General Toxicity Maternal: LOAEC: 400  
Embryo-fetal toxicity.: LOAEC F1: 200  
Method: OECD Test Guideline 414

### Hydrogen peroxide:

Reproductive toxicity - Assessment : No data available

### STOT-single exposure

May cause respiratory irritation.

#### Components:

### N-Methyl-2-pyrrolidone:

Assessment : May cause respiratory irritation.

### Hydrogen peroxide:

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

### STOT-repeated exposure

Not classified due to lack of data.

#### Components:

### Hydrogen peroxide:

Remarks : No data available

### Repeated dose toxicity

#### Components:

### N-Methyl-2-pyrrolidone:

Species : Rat  
NOAEL : 0.5 mg/l  
LOAEL : 1 mg/l  
Application Route : inhalation (vapor)  
Exposure time : 90 d

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## NOROX® AZOX

Version 2.2      Revision Date: 05/13/2024      SDS Number: 600000000076      Date of last issue: 06/27/2022  
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Method : OECD Test Guideline 413

Species : Rat  
NOAEL : 3,000 mg/kg  
LOAEL : 7,500 mg/kg  
Application Route : Ingestion  
Exposure time : 90 d  
Method : OECD Test Guideline 408

Species : Rat  
NOAEL : 6,000 mg/kg  
LOAEL : 18,000 mg/kg  
Application Route : oral (feed)  
Exposure time : 28 d  
Method : OECD Test Guideline 407

Species : Rabbit  
NOAEL : 826 mg/kg  
Application Route : Skin contact  
Exposure time : 20 d  
Method : OECD Test Guideline 410

### Acetylacetone:

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

Species : Rat  
NOAEL : 100 mg/kg  
Application Route : inhalation (vapor)  
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

### Hydrogen peroxide:

Species : Mouse, female  
NOAEL : 37 mg/kg  
Application Route : oral (drinking water)  
Exposure time : 90 d  
Remarks : Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), 35%

Species : Mouse, males  
NOAEL : 26 mg/kg

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Application Route : oral (drinking water)  
Exposure time : 90  
Remarks : Hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>), 35%

### Aspiration toxicity

Not classified due to lack of data.

### Components:

#### Acetylacetone:

No aspiration toxicity classification

#### Hydrogen peroxide:

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

### Further information

#### Product:

Remarks : No data available

#### Components:

#### Acetylacetone:

Remarks : Solvents may degrease the skin.

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## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

#### 2,4-Pentanedione, 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

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

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Toxicity to microorganisms : EC50: 614 mg/l  
Exposure time: 3 h  
Method: OECD Test Guideline 209

### **N-Methyl-2-pyrrolidone:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): > 500 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1,000 mg/l  
Exposure time: 24 h  
Method: DIN 38412

EC50 (Palaeomonetes vulgaris (Grass shrimp)): 1,107 mg/l  
Exposure time: 96 h

Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): > 500 mg/l  
Exposure time: 72 h

NOEC (Desmodesmus subspicatus (green algae)): 125 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 12.5 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

LOEC (Daphnia magna (Water flea)): 25 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

Toxicity to microorganisms : EC50: > 600 mg/l  
Exposure time: 0.5 h  
Method: ISO 8192

### **Acetylacetone:**

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

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

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 83.22 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

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

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

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

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

### Hydrogen peroxide:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 16.4 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia pulex (Water flea)): 2.4 mg/l  
Exposure time: 48 h

Toxicity to algae/aquatic plants : EC50 (Skeletonema costatum (marine diatom)): 1.38 mg/l  
Exposure time: 72 h

NOEC (Skeletonema costatum (marine diatom)): 0.63 mg/l  
Exposure time: 72 h

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.63 mg/l  
Exposure time: 21 d

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

### Persistence and degradability

#### Components:

#### 2,4-Pentanedione, peroxide:

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

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### **N-Methyl-2-pyrrolidone:**

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

### **Acetylacetone:**

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

### **Hydrogen peroxide:**

Biodegradability : Result: Readily biodegradable.

### **Bioaccumulative potential**

#### **Components:**

#### **2,4-Pentanedione, peroxide:**

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

#### **N-Methyl-2-pyrrolidone:**

Partition coefficient: n-octanol/water : log Pow: -0.46 (25 °C)

#### **Acetylacetone:**

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

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

#### **Hydrogen peroxide:**

Partition coefficient: n-octanol/water : log Pow: -1.57 (20 °C)  
Remarks: Information refers to the main ingredient.  
Calculation

### **Mobility in soil**

No data available

### **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.

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### SECTION 13. DISPOSAL CONSIDERATIONS

#### Disposal methods

- Waste from residues : 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.
- 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.

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### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

##### UNRTDG

- UN number : UN 3105
- Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID (ACETYL ACETONE PEROXIDE)
- Class : 5.2
- Packing group : Not assigned by regulation
- Labels : 5.2
- Environmentally hazardous : no

##### IATA-DGR

- UN/ID No. : UN 3105
- Proper shipping name : Organic peroxide type D, liquid (Acetyl acetone peroxide)
- Class : 5.2
- 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 3105
- Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID (ACETYL ACETONE PEROXIDE)
- Class : 5.2
- Packing group : Not assigned by regulation
- Labels : 5.2

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EmS Code : F-J, S-R  
Marine pollutant : no

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

Not applicable for product as supplied.

### Domestic regulation

#### TDG

UN number : UN 3105  
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID  
(ACETYL ACETONE PEROXIDE)  
Class : 5.2  
Packing group : II  
Labels : 5.2  
ERG Code : 145  
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.

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## SECTION 15. REGULATORY INFORMATION

**NPRI Components** : N-Methyl-2-pyrrolidone

### International Regulations

Gefahrgruppe nach TRGS 741: II (German regulatory requirements)

### The ingredients 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  
AIIIC (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



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### Canadian lists

No substances are subject to a Significant New Activity Notification.

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## SECTION 16. OTHER INFORMATION

### Further information

This material 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 Material Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

Revision Date : 05/13/2024  
Date format : mm/dd/yyyy

### Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)  
ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)  
CA AB OEL : Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)  
CA BC OEL : Canada. British Columbia OEL  
CA ON OEL : Ontario Table of Occupational Exposure Limits made under the Occupational Health and Safety Act.  
CA QC OEL : Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants  
ACGIH / TWA : 8-hour, time-weighted average  
CA AB OEL / TWA : 8-hour Occupational exposure limit  
CA BC OEL / TWA : 8-hour time weighted average  
CA ON OEL / TWA : Time-Weighted Average Limit (TWA)  
CA QC OEL / TWA EV : Time-weighted average exposure value

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 Sys-

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tem; 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; TECl - 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

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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