

# SAFETY DATA SHEET

## NOROX<sup>®</sup> MEC-EX



Version 4.0      Revision Date: 10/10/2023      SDS Number: 600000000095      Date of last issue: 06/24/2021  
Date of first issue: 12/20/2016

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### SECTION 1. IDENTIFICATION

Trade name : NOROX<sup>®</sup> MEC-EX

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 : Hardener

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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

Acute toxicity (Oral) : Category 4

Skin corrosion : Category 1B

Serious eye damage : Category 1

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Reproductive toxicity : Category 2

Short-term (acute) aquatic hazard : Category 3

### GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H227 Combustible liquid.  
H242 Heating may cause a fire.  
H302 Harmful if swallowed.  
H314 Causes severe skin burns and eye damage.  
H361 Suspected of damaging fertility or the unborn child.  
H402 Harmful 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.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
**Response:**  
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.  
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.  
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER/ doctor.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.  
P308 + P313 IF exposed or concerned: Get medical advice/

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attention.

P363 Wash contaminated clothing before reuse.

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

### Storage:

P403 Store in a well-ventilated place.

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)
dimethyl phthalate	dimethyl phthalate	131-11-3	>= 45 - < 50 *
2-Butanone, peroxide	2-Butanone, peroxide	1338-23-4	>= 20 - < 25 *
Trimethylpentanediol isobutyrate	Trimethylpentanediol isobutyrate	6846-50-0	>= 15 - < 20 *
cyclohexanone, peroxide	cyclohexanone, peroxide	12262-58-7	>= 7.5 - < 10 *
Hydrogen peroxide	Hydrogen peroxide	7722-84-1	>= 1 - < 5 *
2-methylpentane-2,4-diol	2-methylpentane-2,4-diol	107-41-5	>= 1 - < 5 *
Butanone	Butanone	78-93-3	>= 1 - < 5 *

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

## SECTION 4. FIRST AID MEASURES

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- 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.  
Call a physician immediately.  
If breathed in, move person into fresh air.  
If not breathing, give artificial respiration.  
Respiratory tract burning possible if aerosols are inhaled.  
Call a physician or poison control center 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.  
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.  
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 : Small amounts splashed into eyes can cause irreversible tissue damage and blindness.  
In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
Continue rinsing eyes during transport to hospital.  
Remove contact lenses.  
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.  
Do NOT induce vomiting.  
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : Harmful if swallowed.  
Causes serious eye damage.  
Suspected of damaging fertility or the unborn child.

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Causes severe burns.

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.  
The product will float on water and can be reignited on surface water.  
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.

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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.  
Ensure adequate ventilation.  
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.

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- Advice on safe handling : Open drum carefully as content may be under pressure.  
Protect from contamination.  
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.
- Conditions for safe storage : Store in original container.  
Keep containers tightly closed in a cool, well-ventilated place.  
Store in cool place.  
Keep in a well-ventilated 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 strong acids, bases, heavy metal salts and other reducing substances.
- Recommended storage temperature : < 38 °C
- Further information on storage stability : No decomposition if stored normally.  
  
No decomposition if stored normally.

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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

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dimethyl phthalate	131-11-3	TWA	5 mg/m3	CA AB OEL
		TWA	5 mg/m3	CA BC OEL
		TWAEV	5 mg/m3	CA QC OEL
		TWA	5 mg/m3	ACGIH
2-Butanone, peroxide	1338-23-4	(c)	0.2 ppm 1.4 mg/m3	CA AB OEL
		C	0.2 ppm	CA BC OEL
		C	0.2 ppm 1.5 mg/m3	CA QC OEL
		C	0.2 ppm	ACGIH
Hydrogen peroxide	7722-84-1	TWA	1 ppm 1.4 mg/m3	CA AB OEL
		TWA	1 ppm	CA BC OEL
		TWAEV	1 ppm	CA QC OEL
		TWA	1 ppm	ACGIH
2-methylpentane-2,4-diol	107-41-5	(c)	25 ppm 121 mg/m3	CA AB OEL
		C	25 ppm	CA BC OEL
		C	25 ppm 121 mg/m3	CA QC OEL
		TWA (Vapor)	25 ppm	ACGIH
		STEL (Vapor)	50 ppm	ACGIH
		STEL (Inhalable fraction, Aerosol only)	10 mg/m3	ACGIH
Butanone	78-93-3	TWA	200 ppm 590 mg/m3	CA AB OEL
		STEL	300 ppm 885 mg/m3	CA AB OEL
		TWA	50 ppm	CA BC OEL
		STEL	100 ppm	CA BC OEL
		TWAEV	50 ppm 150 mg/m3	CA QC OEL
		STEV	100 ppm 300 mg/m3	CA QC OEL
		TWA	200 ppm	ACGIH
		STEL	300 ppm	ACGIH

### Biological occupational exposure limits

Components	CAS-No.	Control parameters	Biological specimen	Sam-pling time	Permissible concentra-tion	Basis
Butanone	78-93-3	methyl ethyl ketone	Urine	End of shift (As soon as possible after exposure)	2 mg/l	ACGIH BEI



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					ceases)		
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**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

Material : Nitrile rubber  
Break through time : < 30 min  
Glove thickness : 0.4 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 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.

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- 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 : slight
- pH : No data available
- Melting point/range : No data available
- Boiling point/boiling range : Decomposition: Decomposes below the boiling point.
- Flash point : 76 °C  
Method: Seta 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 : slightly soluble

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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

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

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### SECTION 10. STABILITY AND REACTIVITY

Reactivity : Stable under recommended storage conditions.  
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

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

Harmful if swallowed.

#### **Product:**

Acute oral toxicity : Acute toxicity estimate: 1,785 mg/kg  
Method: Calculation method

Acute inhalation toxicity : Acute toxicity estimate: > 5 mg/l  
Exposure time: 4 h

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Test atmosphere: dust/mist  
Method: Calculation method

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

### **Components:**

#### **dimethyl phthalate:**

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg

Acute inhalation toxicity : (Rat): > 10.4 mg/l  
Exposure time: 6 h  
Test atmosphere: vapor  
Remarks: No mortality observed at this dose.

Acute dermal toxicity : LD50 (Rabbit): > 12,000 mg/kg

#### **2-Butanone, peroxide:**

Acute oral toxicity : Acute toxicity estimate: 500 mg/kg  
Method: Expert judgment

Acute inhalation toxicity : Acute toxicity estimate: 1.5 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: Expert judgment  
Assessment: The component/mixture is moderately toxic after short term inhalation.  
Remarks: Based on data from similar materials

Acute dermal toxicity : Acute toxicity estimate: 2,500 mg/kg  
Method: Expert judgment

#### **Trimethylpentanediol isobutyrate:**

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

Acute inhalation toxicity : LCLo (Rat): > 0.12 mg/l  
Exposure time: 6 h  
Test atmosphere: vapor  
Method: Expert judgment  
Assessment: The substance or mixture has no acute inhalation toxicity  
Remarks: No mortality observed at this dose.

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

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toxicity

### **cyclohexanone, peroxide:**

- Acute oral toxicity : LD50 (Rat): 1,155 mg/kg
- Acute inhalation toxicity : LC50 (Rat): > 5,000 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist
- Acute dermal toxicity : LD50: > 2,000 mg/kg  
Remarks: Information given is based on data obtained from similar substances.

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

### **2-methylpentane-2,4-diol:**

- Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 420  
Assessment: The substance or mixture has no acute oral toxicity  
Remarks: No mortality observed at this dose.
- Acute inhalation toxicity : LC50 (Rat, male): > 55 mg/l  
Exposure time: 8 h  
Test atmosphere: vapor  
Assessment: The substance or mixture has no acute inhalation toxicity  
Remarks: No mortality observed at this dose.
- Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg  
Method: OECD Test Guideline 402  
Assessment: The substance or mixture has no acute dermal toxicity  
Remarks: No mortality observed at this dose.

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### **Butanone:**

Acute oral toxicity : LD50 (Rat): 2,193 mg/kg  
Method: OECD Test Guideline 423

Acute inhalation toxicity : Remarks: No data available

Acute dermal toxicity : LD50 (Rabbit): > 5,000 mg/kg  
Method: OECD Test Guideline 402  
Remarks: Based on available data, the classification criteria are not met.

### **Skin corrosion/irritation**

Causes severe burns.

### **Product:**

Remarks : Extremely corrosive and destructive to tissue.

### **Components:**

#### **dimethyl phthalate:**

Species : Rabbit  
Method : Draize Test  
Result : No skin irritation

#### **2-Butanone, peroxide:**

Species : Rabbit  
Result : Causes burns.

#### **Trimethylpentanediol isobutyrate:**

Species : Guinea pig  
Exposure time : 24 h  
Result : No skin irritation  
Remarks : Based on available data, the classification criteria are not met.

#### **cyclohexanone, peroxide:**

Species : Rabbit  
Result : Severe skin irritation

#### **Hydrogen peroxide:**

Result : Corrosive after 3 minutes or less of exposure

#### **2-methylpentane-2,4-diol:**

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

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Remarks : Based on harmonised classification in EU regulation 1272/2008, Annex VI

### **Butanone:**

Species : Rabbit  
Assessment : Repeated exposure may cause skin dryness or cracking.  
Method : OECD Test Guideline 404  
Result : No skin irritation

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

Causes serious eye damage.

### **Product:**

Remarks : May cause irreversible eye damage.

### **Components:**

#### **dimethyl phthalate:**

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

#### **2-Butanone, peroxide:**

Result : Irreversible effects on the eye

#### **Trimethylpentanediol isobutyrate:**

Species : Rabbit  
Result : No eye irritation  
Exposure time : 24 h

#### **cyclohexanone, peroxide:**

Species : Rabbit  
Result : Severe irritation

#### **Hydrogen peroxide:**

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

Remarks : May cause irreversible eye damage.

#### **2-methylpentane-2,4-diol:**

Species : Rabbit  
Result : irritating  
Method : OECD Test Guideline 405  
Remarks : Based on harmonised classification in EU regulation 1272/2008, Annex VI

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### **Butanone:**

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

### **Respiratory or skin sensitization**

#### **Skin sensitization**

Not classified based on available information.

#### **Respiratory sensitization**

Not classified based on available information.

### **Components:**

#### **dimethyl phthalate:**

Species : Mouse  
Method : OECD Test Guideline 429  
Result : Does not cause skin sensitization.

#### **2-Butanone, peroxide:**

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

Assessment : Harmful if swallowed., Harmful if inhaled.

#### **Trimethylpentanediol isobutyrate:**

Species : Guinea pig  
Result : Does not cause skin sensitization.

#### **2-methylpentane-2,4-diol:**

Test Type : Maximization Test  
Routes of exposure : Skin contact  
Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : Does not cause skin sensitization.

### **Butanone:**

Routes of exposure : Skin contact  
Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : Does not cause skin sensitization.

### **Germ cell mutagenicity**

Not classified based on available information.



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### **Components:**

#### **dimethyl phthalate:**

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

Method: OECD Test Guideline 473  
Result: negative

Method: OECD Test Guideline 476  
Result: positive

Genotoxicity in vivo      :    Test Type: Chromosomal aberration  
Species: Rat  
Application Route: Intraperitoneal  
Result: negative

Test Type: Micronucleus test  
Species: Mouse  
Application Route: Intraperitoneal injection  
Result: negative

#### **2-Butanone, peroxide:**

Genotoxicity in vitro      :    Method: OECD Test Guideline 473  
Result: negative

Method: OECD Test Guideline 471  
Result: negative

Method: OECD Test Guideline 476  
Result: negative

#### **Trimethylpentanediol isobutyrate:**

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

Test Type: Ames test  
Method: Regulation (EC) No. 440/2008, Annex, B.13/14  
(Ames test)  
Result: negative

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

#### **cyclohexanone, peroxide:**

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

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Genotoxicity in vivo : Species: Mouse  
Application Route: Intraperitoneal  
Method: OECD Test Guideline 474  
Result: negative

### Hydrogen peroxide:

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.

### 2-methylpentane-2,4-diol:

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

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

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

Germ cell mutagenicity - Assessment : In vitro tests did not show mutagenic effects

### Butanone:

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Genotoxicity in vitro : Method: OECD Test Guideline 471  
Result: negative  
  
Method: OECD Test Guideline 476  
Result: negative  
  
Method: OECD Test Guideline 473  
Result: negative

Genotoxicity in vivo : Species: Mouse  
Application Route: Intraperitoneal  
Method: OECD Test Guideline 474  
Result: negative

### **Carcinogenicity**

Not classified based on available information.

### **Components:**

#### **dimethyl phthalate:**

Species : Rat  
Application Route : Skin contact  
Method : OECD Test Guideline 451  
Result : negative  
Remarks : Based on data from similar materials

#### **2-Butanone, peroxide:**

Remarks : This information is not available.

#### **Hydrogen peroxide:**

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

#### **2-methylpentane-2,4-diol:**

Remarks : This information is not available.

Carcinogenicity - Assessment : Based on available data, the classification criteria are not met.

### **Reproductive toxicity**

Suspected of damaging fertility or the unborn child.

### **Components:**

#### **dimethyl phthalate:**

Effects on fertility : Species: Rat  
Application Route: oral (gavage)  
Method: OECD Test Guideline 440  
Result: negative

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Effects on fetal development : Species: Rat  
Application Route: Ingestion  
General Toxicity Maternal: NOAEL: 840 mg/kg body weight  
Developmental Toxicity: NOAEL: 3,570 mg/kg body weight  
Method: OECD Test Guideline 414

### **2-Butanone, peroxide:**

Effects on fertility : Species: Rat  
Application Route: oral (gavage)  
General Toxicity Parent: NOAEL: 50 mg/kg body weight  
Method: OECD Test Guideline 421  
Result: negative

### **Trimethylpentanediol isobutyrate:**

Effects on fetal development : Test Type: One-generation reproduction toxicity study  
Species: Rat  
Application Route: Ingestion  
Method: OECD Test Guideline 414  
Result: negative

Reproductive toxicity - Assessment : Suspected of damaging fertility or the unborn child., Some evidence of adverse effects on sexual function and fertility, and/or on development, based on animal experiments.

### **Hydrogen peroxide:**

Reproductive toxicity - Assessment : No data available

### **2-methylpentane-2,4-diol:**

Effects on fertility : Species: Rat  
Strain: wistar  
Application Route: oral (gavage)  
Method: OECD Test Guideline 443  
Result: negative

Reproductive toxicity - Assessment : Some evidence of adverse effects on development, based on animal experiments., Suspected of damaging the unborn child.

### **Butanone:**

Effects on fertility : Species: Rat  
Application Route: oral (drinking water)  
General Toxicity Parent: NOAEL: 10,000 mg/l  
General Toxicity F1: NOAEL: 10,000 mg/l  
Method: OECD Test Guideline 416  
Remarks: Based on data from similar materials

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Species: Rat  
Application Route: oral (drinking water)  
General Toxicity Parent: LOAEL: 20,000 mg/l  
Method: OECD Test Guideline 416  
Remarks: Based on data from similar materials

Effects on fetal development : Species: Rat  
Application Route: Inhalation  
General Toxicity Maternal: NOAEC: ca. 1,002 mg/kg body weight  
Teratogenicity: NOAEC Parent: ca. 1,002 mg/kg body weight  
Method: OECD Test Guideline 414  
Result: negative

### STOT-single exposure

Not classified based on available information.

#### Components:

##### Hydrogen peroxide:

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

##### 2-methylpentane-2,4-diol:

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

##### Butanone:

Assessment : May cause drowsiness or dizziness.

### STOT-repeated exposure

Not classified based on available information.

#### Components:

##### Hydrogen peroxide:

Remarks : No data available

##### 2-methylpentane-2,4-diol:

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

### Repeated dose toxicity

#### Components:

##### dimethyl phthalate:

Species : Rat  
NOAEL : 770 mg/kg

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Application Route : Oral  
Exposure time : 16 w  
Method : OECD Test Guideline 408

### **2-Butanone, peroxide:**

Species : Rat  
NOAEL : 200 mg/kg  
Application Route : oral (gavage)  
Exposure time : 28 d  
Method : OECD Test Guideline 407

Repeated dose toxicity - Assessment : Harmful if swallowed., Harmful if inhaled.

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

### **2-methylpentane-2,4-diol:**

Species : Rat, male and female  
NOAEL : 450 mg/kg bw/day  
Application Route : Ingestion  
Exposure time : 90  
Method : OECD Test Guideline 408

### **Aspiration toxicity**

Not classified based on available information.

### **Components:**

#### **dimethyl phthalate:**

No aspiration toxicity classification

#### **Trimethylpentanediol isobutyrate:**

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

#### **Hydrogen peroxide:**

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

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### 2-methylpentane-2,4-diol:

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

### Further information

#### Product:

Remarks : No data available

#### Components:

##### **dimethyl phthalate:**

Remarks : No data available

##### **Trimethylpentanediol isobutyrate:**

Remarks : No data available

---

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

##### **dimethyl phthalate:**

- Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 39 mg/l  
Exposure time: 96 h
- Toxicity to daphnia and other aquatic invertebrates : LC50 (Daphnia magna (Water flea)): > 52 mg/l  
Exposure time: 48 h
- Toxicity to algae/aquatic plants : EC50 (Desmodesmus subspicatus (green algae)): 260 mg/l  
Exposure time: 72 h
- Toxicity to fish (Chronic toxicity) : NOEC (Oncorhynchus mykiss (rainbow trout)): 11 mg/l  
Exposure time: 102 d  
Method: OECD Test Guideline 210
- LOEC (Oncorhynchus mykiss (rainbow trout)): 24 mg/l  
Exposure time: 102 d  
Method: OECD Test Guideline 210
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 9.6 mg/l  
Exposure time: 21 d
- LOEC (Daphnia magna (Water flea)): 23 mg/l  
Exposure time: 21 d
- Toxicity to microorganisms : EC50: 4,100 mg/l  
Exposure time: 0.5 h

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Method: OECD Test Guideline 209

### **2-Butanone, peroxide:**

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 44.2 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

NOEC (Poecilia reticulata (guppy)): 18 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 39 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

NOEC (Daphnia magna (Water flea)): 26.7 mg/l  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 5.6 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 2.1 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (Bacteria): 48 mg/l  
Exposure time: 0.5 h  
Method: OECD Test Guideline 209

### **Trimethylpentanediol isobutyrate:**

Toxicity to fish : NOEC (Fish):  $\geq$  6 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia):  $\geq$  1.46 mg/l  
Exposure time: 48 h

NOEC (Daphnia): 0.7 mg/l  
Exposure time: 21 d

Toxicity to algae/aquatic plants : EC50 (Chlorella pyrenoidosa):  $>$  7.49 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : LOEC (Daphnia magna (Water flea)): 0.7 mg/l  
Exposure time: 21 d



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### Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

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

### cyclohexanone, peroxide:

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 48 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : Remarks: No data available

Toxicity to algae/aquatic plants : Remarks: No data available

Toxicity to microorganisms : EC10 (Bacteria): 11.1 mg/l  
Exposure time: 0.5 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

### 2-methylpentane-2,4-diol:

Toxicity to fish : LC50 (Gambusia affinis (Mosquito fish)): 8,510 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 5,410 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

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Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 429 mg/l  
End point: Growth rate  
Exposure time: 72 h  
Test Type: static test  
Method: OECD Test Guideline 201

NOEC (Raphidocelis subcapitata (freshwater green alga)): 729 mg/l  
End point: Growth rate  
Exposure time: 72 h  
Test Type: static test  
Method: OECD Test Guideline 201

Toxicity to microorganisms : Remarks: No data available

### **Butanone:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2,993 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 308 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 2,029 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 201

Toxicity to microorganisms : NOEC (Pseudomonas putida): 1,150 mg/l  
Exposure time: 16 h  
Method: DIN 38 412 Part 8

### **Persistence and degradability**

#### **Components:**

##### **dimethyl phthalate:**

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

##### **2-Butanone, peroxide:**

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

##### **Trimethylpentanediol isobutyrate:**

Biodegradability : Result: rapidly biodegradable

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Exposure time: 28 d  
Method: OECD Test Guideline 301B

### **cyclohexanone, peroxide:**

Biodegradability : Result: rapidly biodegradable  
Method: OECD Test Guideline 301D

### **Hydrogen peroxide:**

Biodegradability : Result: Readily biodegradable.

### **2-methylpentane-2,4-diol:**

Biodegradability : aerobic  
Inoculum: activated sludge  
Result: Readily biodegradable.  
Biodegradation: 81 %  
Method: OECD Test Guideline 301F

### **Butanone:**

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

### **Bioaccumulative potential**

#### **Components:**

#### **dimethyl phthalate:**

Bioaccumulation : Bioconcentration factor (BCF): 57  
Method: OECD Test Guideline 305

Partition coefficient: n-octanol/water : log Pow: 1.54

#### **2-Butanone, peroxide:**

Partition coefficient: n-octanol/water : log Pow: < 0.3 (25 °C)

#### **Trimethylpentanediol isobutyrate:**

Bioaccumulation : Species: Fish  
Bioconcentration factor (BCF): 1.95

Partition coefficient: n-octanol/water : log Pow: 4.91 (25 °C)

#### **cyclohexanone, peroxide:**

Partition coefficient: n-octanol/water : log Pow: 1.26

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### Hydrogen peroxide:

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

### 2-methylpentane-2,4-diol:

Partition coefficient: n-octanol/water : log Pow: -0.14

### Butanone:

Partition coefficient: n-octanol/water : log Pow: 0.3 (40 °C)

### 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.  
Harmful to aquatic life.

### Components:

#### dimethyl phthalate:

Additional ecological information : No data available

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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  
(METHYL ETHYL KETONE PEROXIDE(S),  
CYCLOHEXANONE PEROXIDE(S))  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : 5.2

##### IATA-DGR

UN/ID No. : UN 3105  
Proper shipping name : Organic peroxide type D, liquid  
(Methyl ethyl ketone peroxide(s), Cyclohexanone peroxide(s))  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : Organic Peroxides, Keep Away From Heat  
Packing instruction (cargo : 570  
aircraft)  
Packing instruction (passen- : 570  
ger aircraft)

##### IMDG-Code

UN number : UN 3105  
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID  
(METHYL ETHYL KETONE PEROXIDE(S),  
CYCLOHEXANONE PEROXIDE(S))  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : 5.2  
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  
(METHYL ETHYL KETONE PEROXIDE(S),  
CYCLOHEXANONE PEROXIDE(S))  
Class : 5.2  
Packing group : II  
Labels : 5.2  
ERG Code : 145  
Marine pollutant : no

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### 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** : dimethyl phthalate  
Butanone

**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  
AIC (AU) : All components are listed on the inventory, regulatory obligations/restrictions apply  
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  
TECI (TH) : On the inventory, or in compliance with the inventory

### 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/>

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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 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  
ACGIH / STEL : Short-term exposure limit  
ACGIH / C : Ceiling limit  
CA AB OEL / TWA : 8-hour Occupational exposure limit  
CA AB OEL / STEL : 15-minute occupational exposure limit  
CA AB OEL / (c) : ceiling occupational exposure limit  
CA BC OEL / TWA : 8-hour time weighted average  
CA BC OEL / STEL : short-term exposure limit  
CA BC OEL / C : ceiling limit  
CA QC OEL / TWAEV : Time-weighted average exposure value  
CA QC OEL / STEV : Short-term exposure value  
CA QC OEL / C : Ceiling

AllC - 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,

# SAFETY DATA SHEET

## NOROX<sup>®</sup> MEC-EX



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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

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