

# SAFETY DATA SHEET

according to the Hazardous Products Regulations



## NOROX®411

Version	Revision Date:	SDS Number:	Date of last issue: 07/27/2022
2.1	12/10/2024	600000000675	Date of first issue: 04/05/2019

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### SECTION 1. IDENTIFICATION

Trade name : NOROX®411  
Other means of identification : No data available  
CAS-No. : 686-31-7

#### 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 : GFL Environmental Inc. (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 sensitization : Sub-category 1B

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Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

### GHS label elements

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H227 Combustible liquid.  
H242 Heating may cause a fire.  
H317 May cause an allergic skin reaction.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements :

#### Prevention:

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.  
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.  
P333 + P313 If skin irritation or rash occurs: 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.  
P391 Collect spillage.

#### Storage:

P403 Store in a well-ventilated place.  
P410 Protect from sunlight.  
P411 Store at temperatures not exceeding < 10 °C/ < 50 °F.  
P420 Store separately.

#### Disposal:

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

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### Other hazards

None known.

### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance  
Chemical nature : Organic Peroxide liquid  
Substance name : tert-amyl 2-ethylperoxyhexanoate  
CAS-No. : 686-31-7  
Common Name/Synonym : No data available

### Components

Chemical name	Common Name/Synonym	CAS-No.	Concentration (% w/w)
tert-Pentyl 2-ethylperoxyhexanoate	tert-Pentyl 2-ethylperoxyhexanoate	686-31-7	<= 100 *

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

### 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.

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.  
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

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- 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.  
Keep respiratory tract clear.  
If symptoms persist, call a physician.
- Most important symptoms and effects, both acute and delayed : May cause an allergic skin reaction.  
May cause an allergic skin reaction.  
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.

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- 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.  
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.

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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.  
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.  
Keep in a well-ventilated place.  
Contamination may result in dangerous pressure increases - closed containers may rupture.  
Observe label precautions.

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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 : < 10 °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

Contains no substances with occupational exposure limit values.

**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 : Nitrile rubber  
Break through time : 480 min  
Glove thickness : 0.4 mm

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 : ester-like
- Odor Threshold : No data available
- pH : No data available
- Melting point/ range : No data available



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Initial boiling point and boiling range : Decomposition: Decomposes below the boiling point.

Flash point : 67 °C  
(1,013 hPa)  
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 : 0.0002 hPa (25 °C)

Relative vapor density : No data available

Density : 0.9 g/cm<sup>3</sup> (20 °C)

Solubility(ies)  
Water solubility : 0.018 g/l insoluble (20 °C)

Partition coefficient: n-octanol/water : log Pow: 4.56

Self-Accelerating decomposition temperature (SADT) : 35 °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 : 4.3 mPa.s (20 °C)

Explosive properties : Not explosive

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

Refractive index : 1.433 (20 °C)

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### SECTION 10. STABILITY AND REACTIVITY

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

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- 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

Not classified due to lack of data.

#### Components:

##### **tert-Pentyl 2-ethylperoxyhexanoate:**

- Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg  
Method: OECD Test Guideline 401  
Assessment: The substance or mixture has no acute oral toxicity  
Remarks: No mortality observed at this dose.
- Acute inhalation toxicity : Remarks: Based on available data, the classification criteria are not met.
- Acute dermal toxicity : LD50 (Rabbit, male and female): > 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.

#### **Skin corrosion/irritation**

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

#### Product:

- Remarks : May cause skin irritation in susceptible persons.

#### Components:

##### **tert-Pentyl 2-ethylperoxyhexanoate:**

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Species	:	Rabbit
Exposure time	:	24 h
Assessment	:	No skin irritation
Result	:	No skin irritation

### Serious eye damage/eye irritation

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

#### Product:

Remarks : Vapors may cause irritation to the eyes, respiratory system and the skin.

#### Components:

##### **tert-Pentyl 2-ethylperoxyhexanoate:**

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

### 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:

##### **tert-Pentyl 2-ethylperoxyhexanoate:**

Test Type	:	Maximization Test
Species	:	Guinea pig
Assessment	:	The product is a skin sensitizer, sub-category 1B.
Method	:	OECD Test Guideline 406
Result	:	The product is a skin sensitizer, sub-category 1B.

### Germ cell mutagenicity

Not classified due to lack of data.

#### Components:

##### **tert-Pentyl 2-ethylperoxyhexanoate:**

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

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Test Type: Ames test  
Test system: Salmonella typhimurium  
Method: OECD Test Guideline 471  
Result: negative

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

### **Carcinogenicity**

Not classified due to lack of data.

### **Components:**

#### **tert-Pentyl 2-ethylperoxyhexanoate:**

Remarks : This information is not available.

### **Reproductive toxicity**

Not classified due to lack of data.

### **Components:**

#### **tert-Pentyl 2-ethylperoxyhexanoate:**

Effects on fertility : Test Type: reproductive and developmental toxicity study  
Species: Rat, male and female  
Strain: wistar  
Application Route: Oral  
Dose: 0, 100, 300, 1000 mg/kg bw/day  
Frequency of Treatment: 1 daily  
General Toxicity Parent: NOAEL: 300 mg/kg bw/day  
Early Embryonic Development: NOAEL: 300 mg/kg body weight  
Method: OECD Test Guideline 421  
GLP: yes  
Remarks: Read-across (Analogy)  
Based on data from similar materials

Test Type: reproductive and developmental toxicity study  
Species: Rat, male  
Strain: wistar  
Application Route: Oral  
Dose: 50, 250, 1000 mg/kg bw/day  
Frequency of Treatment: 1 daily  
General Toxicity Parent: NOAEL: 1,000 mg/kg bw/day  
Fertility: NOAEL: 1,000 mg/kg bw/day  
Early Embryonic Development: NOAEL: 250 mg/kg bw/day  
Method: OECD Test Guideline 421  
GLP: yes  
Remarks: Read-across (Analogy)

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Based on data from similar materials

Test Type: reproductive and developmental toxicity study  
Species: Rat, female  
Strain: wistar  
Application Route: Oral  
Dose: 50, 250, 1000 mg/kg bw/day  
Frequency of Treatment: 1 daily  
General Toxicity Parent: NOAEL: 250 mg/kg bw/day  
Fertility: NOAEL: 250 mg/kg bw/day  
Early Embryonic Development: NOAEL: 250 mg/kg bw/day  
Method: OECD Test Guideline 421  
GLP: yes  
Remarks: Read-across (Analogy)  
Based on data from similar materials

### STOT-single exposure

Not classified due to lack of data.

#### Components:

#### **tert-Pentyl 2-ethylperoxyhexanoate:**

Assessment : No data available

### STOT-repeated exposure

Not classified due to lack of data.

#### Components:

#### **tert-Pentyl 2-ethylperoxyhexanoate:**

Assessment : No data available

### Repeated dose toxicity

#### Components:

#### **tert-Pentyl 2-ethylperoxyhexanoate:**

Species : Rat, male and female  
NOAEL : 450 mg/kg bw/day  
Application Route : Oral  
Exposure time : 28 d  
Method : OECD Test Guideline 408  
GLP : yes  
Remarks : Based on data from similar materials

### Aspiration toxicity

Not classified due to lack of data.

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### Components:

#### **tert-Pentyl 2-ethylperoxyhexanoate:**

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

### **Further information**

#### Product:

Remarks : No data available

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## SECTION 12. ECOLOGICAL INFORMATION

### **Ecotoxicity**

#### Components:

#### **tert-Pentyl 2-ethylperoxyhexanoate:**

Toxicity to fish : LC50 (Poecilia reticulata (guppy)): 8.66 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Method: OECD Test Guideline 203  
GLP: yes  
Remarks: Based on data from similar materials

NOEC (Poecilia reticulata (guppy)): 2.1 mg/l  
Exposure time: 96 h  
Test Type: semi-static test  
Method: OECD Test Guideline 203  
GLP: yes  
Remarks: Based on data from similar materials

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 3.7 mg/l  
Exposure time: 48 h  
Test Type: Immobilization  
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 0.28 mg/l  
End point: Growth rate  
Exposure time: 72 h  
Test Type: Growth inhibition  
Method: OECD Test Guideline 201

EC10 (Pseudokirchneriella subcapitata (green algae)): 0.023 mg/l  
End point: Growth rate  
Exposure time: 72 h  
Test Type: Growth inhibition  
Method: OECD Test Guideline 201

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M-Factor (Acute aquatic toxicity) : 1

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.45 mg/l  
Exposure time: 21 d  
Test Type: semi-static test  
Method: OECD Test Guideline 211  
Remarks: Based on data from similar materials

M-Factor (Chronic aquatic toxicity) : 1

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

### Ecotoxicology Assessment

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

### Persistence and degradability

#### Components:

##### **tert-Pentyl 2-ethylperoxyhexanoate:**

Biodegradability : aerobic  
Inoculum: activated sludge, non-adapted  
Result: Readily biodegradable.  
Biodegradation: 62 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301D  
GLP: yes  
Remarks: The 10 day time window criterion is not fulfilled.

### Bioaccumulative potential

#### Components:

##### **tert-Pentyl 2-ethylperoxyhexanoate:**

Bioaccumulation : Bioconcentration factor (BCF): 682  
Remarks: The value is given based on a SAR/AAR approach using OECD Toolbox, DEREK, VEGA QSAR models (CAESAR models), etc.  
Bioaccumulation is unlikely.

Partition coefficient: n-octanol/water : log Pow: 4.56 (25 °C)  
Method: OECD Test Guideline 123

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### 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.  
Very toxic to aquatic life with long lasting effects.

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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 3115  
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID, TEMPERATURE CONTROLLED  
(tert-AMYL PEROXY-2-ETHYLHEXANOATE)  
Class : 5.2  
Packing group : Not assigned by regulation  
Labels : 5.2  
Environmentally hazardous : yes

#### **IATA-DGR**

Not permitted for transport

#### **IMDG-Code**

UN number : UN 3115  
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID, TEMPERATURE CONTROLLED  
(tert-AMYL PEROXY-2-ETHYLHEXANOATE)



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

### 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 3115  
Proper shipping name : ORGANIC PEROXIDE TYPE D, LIQUID, TEMPERATURE CONTROLLED (tert-AMYL PEROXY-2-ETHYLHEXANOATE)  
Class : 5.2  
Packing group : II  
Labels : 5.2  
ERG Code : 148  
Marine pollutant : yes

### 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.

### Additional advice

Temperature controlled transport.:  
Control temperature : 20 °C  
Emergency temperature : 25 °C

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## SECTION 15. REGULATORY INFORMATION

### International Regulations

Gefahrgruppe nach TRGS 741: Ib (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  
AIIC (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

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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

### Full text of other abbreviations

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

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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 : 12/10/2024  
Date format : mm/dd/yyyy

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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