

# SAFETY DATA SHEET

## TMCH-HA-M2



Version 2.0      Revision Date: 09/30/2019      SDS Number: 600000000169      Date of last issue: 06/07/2019  
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### SECTION 1. IDENTIFICATION

Product name : TMCH-HA-M2

#### Manufacturer or supplier's details

Company name of supplier : United Initiators, Inc.

Address : 555 Garden Street  
Elyria OH 44035

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

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 29 CFR 1910.1200

Flammable liquids : Category 3

Organic peroxides : Type C

Skin sensitization : Category 1

Reproductive toxicity : Category 1B

Short-term (acute) aquatic hazard : Category 1

Long-term (chronic) aquatic hazard : Category 1

#### GHS label elements

Hazard pictograms : 

Signal Word : Danger

Hazard Statements : H226 Flammable liquid and vapor.  
H242 Heating may cause a fire.

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H317 May cause an allergic skin reaction.  
H360FD May damage fertility. May damage the unborn child.  
H410 Very toxic to aquatic life with long lasting effects.

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/sparks/open flames/hot surfaces. No smoking.  
P220 Keep/Store away from clothing/ strong acids, bases, heavy metal salts and other reducing substances /combustible materials.  
P233 Keep container tightly closed.  
P234 Keep only in original container.  
P240 Ground/bond container and receiving equipment.  
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
P242 Use only non-sparking tools.  
P243 Take precautionary measures against static discharge.  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.  
P272 Contaminated work clothing must not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ 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.  
P391 Collect spillage.

**Storage:**  
P405 Store locked up.  
P410 Protect from sunlight.  
P411 + P235 Store at temperatures not exceeding < 60 °F/ < 15 °C. Keep cool.  
P420 Store away from other materials.

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

**Other hazards**  
None known.

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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Substance / Mixture : Mixture  
Chemical nature : Organic Peroxide  
Liquid mixture

### Components

Chemical name	CAS-No.	Concentration (% w/w)
tert-Butyl 2-ethylperoxyhexanoate	3006-82-4	>= 50 - < 55
di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide	6731-36-8	>= 25 - < 30
diisobutyl phthalate	84-69-5	>= 25 - < 30
t-Butyl Hydroperoxide	75-91-2	>= 0.25 - < 1

### SECTION 4. FIRST AID MEASURES

General advice : Move out of dangerous area.  
Show this material safety data sheet to the doctor in attendance.  
Do not leave the victim unattended.  
Call a physician immediately.

If inhaled : If unconscious, place in recovery position and seek medical advice.  
If symptoms persist, call a physician.  
If breathed in, move person into fresh air.

In case of skin contact : 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.  
If symptoms persist, call a physician.

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 : Keep respiratory tract clear.  
Call a physician immediately.

Most important symptoms and effects, both acute and delayed : May cause an allergic skin reaction.  
May damage fertility. May damage the unborn child.

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

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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 : 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.
- Flash back possible over considerable distance.  
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 : 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.  
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- 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 : Use personal protective equipment.  
Remove all sources of ignition.  
Evacuate personnel to safe areas.  
Follow safe handling advice and personal protective equipment recommendations.  
Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.  
Never return spills in original containers for re-use.  
Treat recovered material as described in the section "Disposal considerations".
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- 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 combustible material.
- Advice on safe handling : 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.  
Protect from contamination.

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- Conditions for safe storage : 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. Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Store in accordance with the particular national regulations.
- Materials to avoid : Keep away from strong acids, bases, heavy metal salts and other reducing substances.
- Recommended storage temperature : < 60 °F  
< 15 °C
- Further information on storage stability : No decomposition if stored normally.
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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

Hand protection

Remarks : 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. Wash hands before breaks and at the end of workday.

Eye protection : Tightly fitting safety goggles. Please wear suitable protective goggles. Also wear face protection if there is a splash hazard. Ensure that eyewash stations and safety showers are close to the workstation location.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.

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Hygiene measures : 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

pH : No data available

Melting point/range : No data available

Boiling point/boiling range : No data available Decomposition

Flash point : 59 °C

Evaporation rate : Not applicable

Flammability (solid, gas) : Not applicable

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

Upper explosion limit / Upper flammability limit : No data available

Lower explosion limit / Lower flammability limit : No data available

Vapor pressure : not determined

Relative vapor density : No data available

Density : 0.87 g/cm<sup>3</sup> (25 °C)

Solubility(ies)  
Water solubility : negligible

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

Self-Accelerating decomposition temperature (SADT) : 45 °C  
SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.

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Viscosity  
  Viscosity, dynamic           : No data available  
  
  Viscosity, kinematic       : 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.  
  
Chemical stability            : Stable under recommended storage conditions.  
  
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 based on available information.

#### Product:

Acute inhalation toxicity       : Acute toxicity estimate: > 200 mg/l  
                                  Exposure time: 4 h  
                                  Test atmosphere: vapor  
                                  Method: Calculation method  
  
Acute dermal toxicity           : Acute toxicity estimate: > 5,000 mg/kg  
                                  Method: Calculation method

#### Components:

##### **tert-Butyl 2-ethylperoxyhexanoate:**

Acute oral toxicity            : LD0 (Rat):  $\geq$  10,000 mg/kg  
                                  Method: OECD Test Guideline 401  
  
Acute inhalation toxicity       : LC50 (Rat): > 42.2 mg/l



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Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): 16,818 mg/kg  
Method: OECD Test Guideline 402

### **di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:**

Acute oral toxicity : LD50 (Rat): > 2,000 mg/kg  
Method: OECD Test Guideline 401  
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : LC50 (Rat): > 5.6 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Method: OECD Test Guideline 436  
Assessment: The substance or mixture has no acute inhalation toxicity

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

### **diisobutyl phthalate:**

Acute oral toxicity : LD50 (Rat): > 10,000 mg/kg

Remarks: No data available

### **t-Butyl Hydroperoxide:**

Acute oral toxicity : LD50 (Rat): 560 mg/kg  
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 1.85 mg/l  
Exposure time: 4 h  
Test atmosphere: vapor  
Method: OECD Test Guideline 403

Acute dermal toxicity : LD50 (Rabbit): 440 mg/kg  
Method: OECD Test Guideline 402

### **Skin corrosion/irritation**

Not classified based on available information.

### **Product:**

Remarks : May cause skin irritation in susceptible persons.

### **Components:**

#### **tert-Butyl 2-ethylperoxyhexanoate:**

Species : Rabbit  
Method : OECD Test Guideline 404

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Result : No skin irritation

**di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:**

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

**diisobutyl phthalate:**

Species : Mouse  
Result : No skin irritation

**t-Butyl Hydroperoxide:**

Species : Rabbit  
Method : Draize Test  
Result : Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days.

Remarks : Extremely corrosive and destructive to tissue.

**Serious eye damage/eye irritation**

Not classified based on available information.

**Product:**

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

**Components:**

**tert-Butyl 2-ethylperoxyhexanoate:**

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

**di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:**

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

**diisobutyl phthalate:**

Species : Rabbit  
Result : No eye irritation

**t-Butyl Hydroperoxide:**

Species : Rabbit  
Result : Irreversible effects on the eye  
Method : OECD Test Guideline 405

Remarks : May cause irreversible eye damage.

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### Respiratory or skin sensitization

#### Skin sensitization

May cause an allergic skin reaction.

#### Respiratory sensitization

Not classified based on available information.

#### Product:

Remarks : Causes sensitization.

#### Components:

##### **tert-Butyl 2-ethylperoxyhexanoate:**

Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : May cause sensitization by skin contact.

##### **di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:**

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

##### **diisobutyl phthalate:**

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

##### **t-Butyl Hydroperoxide:**

Species : Guinea pig  
Method : OECD Test Guideline 406  
Result : May cause sensitization by skin contact.

Remarks : Causes sensitization.

### Germ cell mutagenicity

Not classified based on available information.

#### Components:

##### **tert-Butyl 2-ethylperoxyhexanoate:**

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

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

Genotoxicity in vivo : Species: Mouse  
Application Route: Ingestion  
Method: OECD Test Guideline 474

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Result: negative

### **di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:**

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

Test Type: Bacterial reverse mutation assay (AMES)  
Method: OECD Test Guideline 471  
Result: negative

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

Genotoxicity in vivo : Remarks: No data available

### **diisobutyl phthalate:**

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

### **t-Butyl Hydroperoxide:**

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

Genotoxicity in vivo : Method: Directive 67/548/EEC, Annex V, B.12.  
Result: negative

Method: Directive 67/548/EEC, Annex V, B.22.  
Result: positive

Germ cell mutagenicity - Assessment : Positive results from in vitro mammalian mutagenicity assays, chemical structure activity relationship to known germ cell mutagens

### **Carcinogenicity**

Not classified based on available information.

### **Components:**

#### **tert-Butyl 2-ethylperoxyhexanoate:**

Remarks : This information is not available.

#### **di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:**

Species : Mouse  
Application Route : Oral  
Result : negative

#### **t-Butyl Hydroperoxide:**

Species : Mouse

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Application Route : Oral  
Result : negative

**IARC** No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

**OSHA** No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**NTP** No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

### Reproductive toxicity

May damage fertility. May damage the unborn child.

#### Components:

##### **tert-Butyl 2-ethylperoxyhexanoate:**

Effects on fertility : Test Type: Reproduction/Developmental toxicity screening test  
Species: Rat  
Application Route: Oral  
General Toxicity Parent: NOAEL: 300 mg/kg body weight  
Method: OECD Test Guideline 421

Test Type: One-generation reproduction toxicity study  
Species: Rat  
Application Route: Oral  
General Toxicity Parent: NOAEL: 300 mg/kg body weight  
General Toxicity F1: NOAEL: 300 mg/kg body weight  
Fertility: NOAEL Mating/Fertility: 100 mg/kg body weight  
Early Embryonic Development: NOAEL F2: 300 mg/kg body weight  
Method: OECD Test Guideline 443  
GLP: yes

Effects on fetal development : Species: Rat  
Application Route: Oral  
Embryo-fetal toxicity.: NOAEL Mating/Fertility: 1,000 mg/kg body weight  
Method: OECD Test Guideline 414

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

##### **di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:**

Effects on fertility : Remarks: No data available

Effects on fetal development : Species: Rat  
Application Route: oral (gavage)  
General Toxicity Maternal: NOAEL: 1,000 mg/kg body weight  
Method: OECD Test Guideline 414

##### **diisobutyl phthalate:**

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

### **t-Butyl Hydroperoxide:**

Effects on fertility : Species: Rat  
Application Route: Oral  
General Toxicity Parent: NOAEL: 21 mg/kg body weight  
Method: OECD Test Guideline 422

Effects on fetal development : Species: Rat  
Application Route: Oral  
General Toxicity Maternal: NOAEL: 35 mg/kg body weight  
Developmental Toxicity: NOAEL: 35 mg/kg body weight  
Method: OECD Test Guideline 414

### **STOT-single exposure**

Not classified based on available information.

#### **Components:**

#### **tert-Butyl 2-ethylperoxyhexanoate:**

Remarks : No data available

### **STOT-repeated exposure**

Not classified based on available information.

#### **Components:**

#### **tert-Butyl 2-ethylperoxyhexanoate:**

Remarks : No data available

### **Repeated dose toxicity**

#### **Components:**

#### **tert-Butyl 2-ethylperoxyhexanoate:**

Species : Rat, male  
NOAEL : 316 mg/kg  
Exposure time : 28 d  
Method : OECD Test Guideline 407

Species : Rat, female  
NOAEL : 100 mg/kg  
Exposure time : 28 d  
Method : OECD Test Guideline 407

Species : Rat  
NOAEL : 450 mg/kg  
Method : OECD Test Guideline 408

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### **t-Butyl Hydroperoxide:**

Species : Rat  
NOAEL : 21 mg/kg  
Application Route : Oral  
Method : OECD Test Guideline 422

Species : Rat  
LOAEL : 0.022 mg/l  
Application Route : Inhalation  
Method : OECD Test Guideline 412

### **Aspiration toxicity**

Not classified based on available information.

### **Further information**

#### **Product:**

Remarks : Solvents may degrease the skin.

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## SECTION 12. ECOLOGICAL INFORMATION

### **Ecotoxicity**

#### **Components:**

##### **tert-Butyl 2-ethylperoxyhexanoate:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 8.66 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

NOEC (Poecilia reticulata (guppy)): 2.10 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 7.5 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 0.44 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.018 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

M-Factor (Acute aquatic toxicity) : 1

Toxicity to daphnia and other aquatic invertebrates (Chron- : NOEC (Daphnia magna (Water flea)): 0.45 mg/l  
Exposure time: 21 d

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ic toxicity)      Method: OECD Test Guideline 211  
  
LOEC (Daphnia magna (Water flea)): 0.87 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211

M-Factor (Chronic aquatic toxicity) : 1

Toxicity to microorganisms : EC50: 64 mg/l  
Exposure time: 0.5 h  
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.

### di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:

Toxicity to fish : LC50 (Brachydanio rerio (zebrafish)): > 0.043 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203  
Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 1 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202  
Remarks: No toxicity at the limit of solubility.

Toxicity to algae : EC10 (Pseudokirchneriella subcapitata (green algae)): 0.11 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201  
Remarks: No toxicity at the limit of solubility.

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.0128 mg/l  
Exposure time: 21 d  
Method: OECD Test Guideline 211  
Remarks: No toxicity at the limit of solubility.

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

### Ecotoxicology Assessment

Chronic aquatic toxicity : May cause long lasting harmful effects to aquatic life.

### diisobutyl phthalate:

Toxicity to fish : LC50 (Oryzias latipes (Orange-red killifish)): 3 mg/l  
Exposure time: 96 h

Toxicity to daphnia and other : EC50 (Daphnia magna (Water flea)): 4.8 mg/l



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aquatic invertebrates      Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae      :    EC50 (Pseudokirchneriella subcapitata (green algae)): ca. 2.2 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

### **t-Butyl Hydroperoxide:**

Toxicity to fish      :    LC50 (Pimephales promelas (fathead minnow)): 29.61 mg/l  
Exposure time: 96 h  
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates      :    EC50 (Daphnia magna (Water flea)): 14.07 mg/l  
Exposure time: 48 h  
Method: OECD Test Guideline 202

Toxicity to algae      :    EC50 (Pseudokirchneriella subcapitata (green algae)): 1.47 mg/l  
Exposure time: 72 h  
Method: OECD Test Guideline 201

Toxicity to microorganisms      :    EC50 (Bacteria): 17 mg/l

### **Persistence and degradability**

#### **Components:**

##### **tert-Butyl 2-ethylperoxyhexanoate:**

Biodegradability      :    Result: Biodegradable  
Method: OECD Test Guideline 301D

##### **di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:**

Biodegradability      :    Result: Biodegradable  
Method: OECD Test Guideline 301D

##### **diisobutyl phthalate:**

Biodegradability      :    Result: Readily biodegradable.  
Method: OECD Test Guideline 302

##### **t-Butyl Hydroperoxide:**

Biodegradability      :    Result: Not readily biodegradable.

### **Bioaccumulative potential**

#### **Components:**

##### **tert-Butyl 2-ethylperoxyhexanoate:**

Partition coefficient: n-octanol/water      :    log Pow: 4.79 (20 °C / 20 °C)

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### **di-tert-butyl 3,3,5-trimethylcyclohexylidene diperoxide:**

Bioaccumulation : Bioconcentration factor (BCF): 443

Partition coefficient: n-octanol/water : log Pow: 6.53

### **diisobutyl phthalate:**

Partition coefficient: n-octanol/water : log Pow: 4.11 (20 °C / 20 °C)

### **t-Butyl Hydroperoxide:**

Partition coefficient: n-octanol/water : log Pow: 0.85 (20 °C / 20 °C)

### **Mobility in soil**

No data available

### **Other adverse effects**

#### **Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

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.

#### **Components:**

##### **t-Butyl Hydroperoxide:**

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

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## SECTION 13. DISPOSAL CONSIDERATIONS

### **Disposal methods**

Waste from residues : The product should not be allowed to enter drains, water courses or the soil.  
Do not contaminate ponds, waterways or ditches with chemical or used container.  
Dispose of wastes in an approved waste disposal facility.

Contaminated packaging : 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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Dispose of in accordance with local regulations.

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### SECTION 14. TRANSPORT INFORMATION

#### International Regulations

##### UNRTDG

UN number                                : UN 3113  
Proper shipping name                    : ORGANIC PEROXIDE TYPE C, LIQUID, TEMPERATURE CONTROLLED (1,1-DI-(tert-BUTYLPEROXY)-3,3,5-TRIMETHYLCYCLOHEXANE, tert-BUTYL PEROXY-2-ETHYLHEXANOATE)  
Class                                        : 5.2  
Packing group                            : Not assigned by regulation  
Labels                                      : 5.2

##### IATA-DGR

Not permitted for transport

##### IMDG-Code

UN number                                : UN 3113  
Proper shipping name                    : ORGANIC PEROXIDE TYPE C, LIQUID, TEMPERATURE CONTROLLED (1,1-DI-(tert-BUTYLPEROXY)-3,3,5-TRIMETHYLCYCLOHEXANE, tert-BUTYL PEROXY-2-ETHYLHEXANOATE)  
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

##### 49 CFR

UN/ID/NA number                        : UN 3113  
Proper shipping name                    : Organic peroxide type C, liquid, temperature controlled (1,1-Di-(tert-butylperoxy)-3,3,5-trimethylcyclohexane, 25%, tert-Butyl peroxy-2-ethylhexanoate, 50%)  
Class                                        : 5.2  
Packing group                            : Not assigned by regulation  
Labels                                      : ORGANIC PEROXIDE  
ERG Code                                  : 148  
Marine pollutant                         : yes

#### Special precautions for user

#### Additional advice:

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

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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

#### **EPCRA - Emergency Planning and Community Right-to-Know**

##### **CERCLA Reportable Quantity**

This material does not contain any components with a CERCLA RQ.

##### **SARA 304 Extremely Hazardous Substances Reportable Quantity**

This material does not contain any components with a section 304 EHS RQ.

##### **SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Flammable (gases, aerosols, liquids, or solids)  
Organic peroxides  
Respiratory or skin sensitization  
Reproductive toxicity

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

#### **Clean Air Act**

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM/I Intermediate or Final VOC's (40 CFR 60.489).

#### **Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

#### **California Prop. 65**

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

#### **The ingredients of this product are reported in the following inventories:**

DSL (CA) : All components of this product are on the Canadian DSL

AICS (AU) : On the inventory, or in compliance with the inventory

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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

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

TSCA (US) : On TSCA Inventory

### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

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## SECTION 16. OTHER INFORMATION

### Full text of other abbreviations

AICS - Australian Inventory of Chemical Substances; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; 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; HMIS - Hazardous Materials Identification System; 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; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance

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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

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.

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 : 09/30/2019

The information provided in this Material 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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