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UNITED INITIATORS

1. Identification

1.1. Product identifier

Trade name

NOROX® 600 (BCHPC)

1.2. Recommended use of the chemical and restrictions on use

Relevant applications identified

polymerization initiator

Details of the supplier of the safety data sheet 1.3.

Company

United Initiators, Inc. 555 Garden Street Elyria, OH 44035

USA

Telephone

440-323-3112

Telefax

440-323-2659

Email address

Cs-initiators.nafta@united-in.com

24 HOUR EMERGENCY TELEPHONE NUMBERS:

CHEMTREC - US &

800-424-9300

CANADA:

CHEMTREC

+1 703-527-3887 (collect calls accepted)

INTERNATIONAL:

Product Regulatory

800-231-2702

Services

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation 29CFR 1910.1200

Organic peroxides Skin Sensitisation Chronic aquatic toxicity Type C Category 1 H242 H317 H412

Category 3

2.2. Label elements

> Statutory basis Symbol(s)

Classification according to Regulation 29CFR 1910.1200



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Signal word

Danger

Hazard statement

H242 - Heating may cause a fire.

H317 - May cause an allergic skin reaction.

H412 - Harmful to aquatic life with long lasting effects.

Precautionary statement:

Prevention

P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P220 - Keep/Store away from clothing/flammable/combustible materials.

P234 - Keep only in original container. P261 - Avoid breathing mist or vapours.

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.

Precautionary statement:

P302 + P352 - IF ON SKIN: Wash with plenty of water/ soap.

Reaction

P333 + P313 - If skin irritation or rash occurs: Get medical advice/ attention.

P363 - Wash contaminated clothing before reuse.

P391 - Collect spillage.

Precautionary statement:

Storage

P411+P235 - Store at temperatures not exceeding 30 °C. Keep cool.

P410 - Protect from sunlight.

P420 - Store away from other materials.

Precautionary statement:

Disposal

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

#### 2.3. Other hazards

None known

#### 3. Composition/information on ingredients

## Bis(4-tert-butylcyclohexyl) peroxydicarbonate

>= 94% - <= 99%

CAS-No.

15520-11-3

Organic peroxides Skin Sensitisation

Chronic aquatic toxicity

Туре С Category 1 Category 3

#### Other Information

This material is classified as hazardous under OSHA regulations.

#### 4. First aid measures

#### Description of first aid measures 4.1.

#### General advice

Take off contaminated clothing immediately.

Never give anything by mouth to an unconscious person.

Remove from exposure, lie down.

If feeling unwell seek medical advice.

## Inhalation

If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If unconscious, evaluate the need for artificial respiration. Get immediate medical attention.

#### Skin contact

Immediately wash skin with soap and plenty of water. Remove contaminated clothing. Obtain medical attention immediately if symptoms occur. Wash clothing before reuse.

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#### Eve contact

In case of contact, immediately flush eyes with plenty of water. Obtain medical attention if irritation develops.

#### Ingestion

If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

#### 4.2. Most important symptoms and effects, both acute and delayed

### Symptoms

None known

# Indication of any immediate medical attention and special treatment needed

None known

#### 5. Fire-fighting measures

#### 5.1. Extinguishing media

Suitable extinguishing media:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

High volume water jet. Unsuitable extinguishing media:

### Special hazards arising from the substance or mixture

Contact with incompatible materials or exposure to temperatures exceeding the SADT may result in a self acceleration decomposition reaction with release of flammable vapors which may autoignite.

Cool closed containers exposed to fire with water spray.

Vapors can travel to a source of ignition and flash back.

Do not allow run-off from fire fighting to enter drains or water courses.

#### Advice for firefighters

Evacuate area and fight fire from a safe distance.

Containers near the source of fire should be cooled with a water spray to prevent contents from reaching decomposition temperature.

Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

As in any fire, wear self-contained positive-pressure breathing apparatus, (MSHA/NIOSH approved or equivalent) and full protective gear.

#### Accidental release measures 6.

#### Personal precautions, protective equipment and emergency procedures 6.1.

Evacuate personnel to safe areas. Wear a self-contained breathing apparatus and appropriate personal protective equipment. (See Section 8 - Exposure Controls/Personal Protection.)

#### 6.2. **Environmental precautions**

Obey relevant local, state, provincial and federal laws and regulations. Do not contaminate any lakes, streams, rivers, groundwater or soil.

#### Methods and material for containment and cleaning up 6.3.

Organic Peroxide spills should be attended to immediately. Remove all sources of ignition. Avoid dispersion of dust. Contain spill. Mix with an inert material and then wet the mixture down with water. Sweep up mixture of spilled organic peroxide and inert absorbent material using non-sparking tools and place in polyethylene bags for disposal. NOTE: A supply of suitable inert absorbent should be kept available in areas where organic peroxides are used. The sweepings in the polyethylene bag should be further wetted with water and disposed of immediately by an approved disposal company. KEEP WASTE REFRIGERATED - THERMALLY UNSTABLE. After all the material has been picked up, wash down the spill area with surfactant and water to remove any traces of organic peroxide.

#### Additional advice

Never return spills in original containers for re-use.

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Dispose of contaminated material as waste in accordance with section 13.

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#### 7. Handling and storage

#### 7.1. Precautions for safe handling

REFRIGERATION REQUIRED Avoid dust formation. Avoid breathing dust. Use only with adequate ventilation. Keep away from heat. Keep away from sparks and other sources of ignition. The need for grounding and bonding of containers in accordance with OSHA 29 CFR 1910.106 and NFPA 77 should be assessed for all product transfers. Do not swallow product. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Wash thoroughly after handling. Protect from contamination (see Section 10 for materials to avoid). Dispense and transfer in an area separate from storage area. Never return unused material to storage receptacle. Wash contact areas after handling. Remove contaminated clothing and wash before reuse. Follow all MSDS/label precautions even after container is emptied because it may retain product residues. The addition of accelerators may result in vigorous decomposition.

### 7.2. Conditions for safe storage, including any incompatibilities

#### Advice on protection against fire and explosion

Avoid the formation of air-dust mixtures and keep sources of ignition (like sparks, flames, open fire) away in order to rule out dust explosions.

Containers exposed to temperatures exceeding the SADT (see section 10) may decompose violently. Consult with specialists to ensure design protects against these hazards.

#### Storage

#### REFRIGERATION REQUIRED

Heat or contamination may cause hazardous decomposition.

Keep containers dry and tightly closed to avoid moisture absorption and contamination.

Keep container away from flammable and explosive substances.

Protect from heat and exposure to direct sunlight

Store in original container.

Residual vapors might explode on ignition; do not apply heat, cut, drill, grind or weld on or near this container

Consult NFPA 400 for storage area guidance. Storage and handling designs should be arranged in consultation with a person experienced in these types of assessments.

# Further information

STORE BELOW 20 °C (68 °F).

Peroxide residues must not be returned into the original container, danger of decomposition!

#### Advice on common storage

Do not store together with:

acids, alkalis, reducing agents, metallic salts.

#### Storage stability

< 20 °C

Store below

#### 8. Exposure controls/personal protection

# 8.1. Control parameters

#### Other information

Contains no substances with occupational exposure limit values.

#### 8.2. Exposure controls

#### Engineering measures

Use process enclosures, local exhaust ventilation or other engineering controls to control airborne exposure.

Avoid accumulation of dust in ventilation ducts or on plant surfaces. Clean areas as needed.

# 8.3. Personal protective equipment

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## Respiratory protection

A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 or applicable federal/provincial requirements must be followed whenever workplace conditions warrant respirator use. NIOSH's "Respirator Decision Logic" may be useful in determining the suitability of various types of respirators.

#### Hand protection

Use impermeable gloves.

Personal protective equipment that provides a barrier to prevent dermal exposure to this substance is required.

Gloves must be inspected prior to use.

The above mentioned hand protection is based on knowledge of the chemistry and anticipated uses of this product but it may not be appropriate for all workplaces. A hazard assessment should be conducted prior to use to ensure suitability of gloves for specific work environments and processes prior to use.

Suitability for specific workplaces should be clarified with protective glove manufacturers.

Glove material

butyl rubber

Material thickness

0.5 mm

Break through time > 8 hrs

### Eye protection

In case of dusts: Wear tight-fitting eye protection (e.g. safety goggles)

### Skin and body protection

A safety shower and eye wash fountain should be readily available.

To identify additional Personal Protective Equipment (PPE) requirements, it is recommended that a hazard assessment in accordance with the OSHA PPE Standard (29CFR1910.132) be conducted before using this product.

### Hygiene measures

Remove and wash contaminated clothing before re-use.

Wash contact areas after handling.

Keep away from food, drink and animal feedingstuffs.

All protective equipment that has been contaminated should be cleaned before reuse.

#### Physical and chemical properties 9.

#### Information on basic physical and chemical properties

physical state

solid

Colour

white

Form

solid, powder

Odour

characteristic

Odour Threshold

not applicable

рН

not applicable

Melting point/range

82 °C

Decomposes before melting.

Initial boiling point and

boiling range

not applicable Decomposes

Flash point

not applicable

vaporation rate

no data available

Flammability (solid, gas) not applicable

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Page no data available

Upper explosion limit

Lower explosion limit

no data available

Vapour pressure

< 0.01 hPa (20 °C)

Relative vapour density

no data available

Relative density

no data available

Density

1.1025 g/cm3

(20 °C)

Water solubility

insoluble

olubility/qualitative

No information available.

Partition coefficient: n-

octanol/water

log Pow:

8.34

Autoignition temperature Not applicable. Decomposes on heating,

Thermal decomposition

ca. 45 °C

Method: SADT (UN test H.4)

Rapid, exothermic reaction may occur above the Self Accelerated

Decomposition Temperature (SADT).

SADT-Self Accelerating Decomposition Temperature. Lowest temperature

at which the tested package size will undergo a self-acclerating

decomposition reaction. This reaction will generate flammable vapors

which may autoignite.

Viscosity, dynamic

not applicable

Viscosity, kinematic

no data available

9.2. Other information

Explosiveness

no data available

peroxides

The substance or mixture is an organic peroxide classified as type C.

#### 10. Stability and reactivity

#### 10.1. Reactivity

Stable under recommended storage conditions.

# 10.2. Chemical stability

Contact with incompatible substances can cause disintegration at or below SADT.

### 10.3. Possibility of hazardous reactions

Stability

Product will not undergo hazardous polymerization.

Possibility of hazardous

reactions

When coming in contact with the product, impurities, decomposition catalysts, metallic salts, alkalis, reducing agents may lead to self-accelerated, exothermic decomposition and the formation of oxygen

compounds.

Risk of decomposition when exposed to heat.

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#### 10.4. Conditions to avoid

Keep away from heat and sources of ignition.

#### 10.5. Incompatible materials

Heavy metal compounds, reducing agents, Combustible material, Strong acids and strong bases, Oxidizing agents, impurities, metal ions, metallic salts, metals.

#### 10.6. Hazardous decomposition products

Temperatures at or above the SADT can result in the release of hazardous decomposition products which are flammable and can autoignite.

In case of fire and decomposition formation of inflammable and explosive, irritant, corrosive, harmful and toxic gases and vapors possible.

Contact with incompatible materials or exposure to temperatures exceeding the SADT may result in a self acceleration decomposition reaction with release of flammable vapors which may autoignite.

#### Toxicological information 11.

## 11.1. Information on toxicological effects

Acute oral toxicity

LD50 Rat: > 5000 mg/kg

Test substance:

Di-(4-t-butylcyclohexyl)peroxydicarbonate

Acute inhalation toxicity

No test results available.

Acute dermal toxicity

No test results available.

Skin irritation

Rabbit

No skin irritation

Method:

**OECD Test Guideline 404** 

Eye irritation

Rabbit

No eye irritation

Method:

OECD Test Guideline 405

Sensitization

Mouse: May cause sensitisation by skin contact.

Method:

**OECD Test Guideline 429** 

Repeated dose toxicity

Oral Rat / 28-day

NOAEL:

500 mg/kg

Method:

OECD Test Guideline 407

No adverse effect has been observed in chronic toxicity tests.

Assessment of STOT single

exposure

No data available

Assessment of STOT repeat

exposure

The substance or mixture is not classified as specific

target organ toxicant, repeated exposure.

Risk of aspiration toxicity

not applicable

Gentoxicity in vitro

Ames test Salmonella typhimurium

negative

Method:

OECD Test Guideline 471

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Mutagenicity assessment

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Tests on bacterial or mammalian cell cultures did not show mutagenic

effects.

carcinogenicity assessment Contains no carcinogenic substances as defined by NTP, IARC and/or

OSHA.

Toxicity to reproduction

No test results available.

Teratogenicity

No test results available.

### Toxicological information on components

# 12. Ecological information

12.1. Toxicity

Toxicity to fish

No data available

Toxicity in aquatic invertebrates

EC50 Daphnia magna (Water flea): 42 mg/l / 48 h

Method: OECD Test Guideline 202

Toxicity to algae

EC50 Desmodesmus subspicatus: 39 mg/l / 72 h

Method: OECD Test Guideline 201

NOEC Desmodesmus subspicatus: 17 mg/li / 72 h

Method: OECD Test Guideline 201

Toxicity to bacteria

Bacteria: > 1000 mg/l

EC50 Bacteria: > 20 mg/l / 3 h Method: OECD Test Guideline 209

12.2. Persistence and degradability

Biodegradability

Result

Not readily biodegradable.

12.3. Bioaccumulative potential

Bioaccumulation

No data available

12.4. Mobility in soil

Mobility

No data available

12.5. Other adverse effects

Further Information

Harmful to aquatic life with long lasting effects.

Avoid release to the environment.

## 13. Disposal considerations

#### 13.1. Waste treatment methods

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#### **Product**

Waste must be disposed of in accordance with federal, state and local regulations. Incineration is the preferred method of disposal. Contact United Initiators at 1-440-323-3112 for additional information. Empty containers must be handled with care due to product residue. DO NOT HEAT OR CUT THE EMPTY CONTAINER WITH ELECTRIC OR GAS TORCH.

#### **Product**

RCRA Classification Ignitable D001.

RCRA Classification Reactive D003.

Uncleaned packaging

Packaging material should be recycled or disposed of in accordance with federal, state and local regulations.

# Transport information

D.O.T. Road/Rail

14.1. UN number:

UN 3114

14.2. UN proper shipping name.

Organic peroxide type C, solid, temperature controlled(Di-(4-

tert-butylcyclohexyl)-peroxydicarbonate,<=100%)

14.3. Transport hazard class(es):

14.4. Packing group:

11

14.5. Environmental hazards (Marine

poliutant):

Yes

14.6. Special precautions for user: Temperature-controlled transport.

Temperature-controlled transport.

Control

30 °C

temperature

Emergency

35 °C

temperature

Air transport ICAO-TI/IATA-DGR

14.1. UN number:

UN 3114

14.2. UN proper shipping name:

Organic peroxide type C, solid, temperature controlled

14.3. Transport hazard class(es):

5.2

14.4. Packing group:

14.5. Environmental hazards:

14.6. Special precautions for user:

Yes

IATA-C: Transport prohibited.

IATA-P: Transport prohibited.

Temperature-controlled transport.

## Sea transport IMDG-Code/GGVSee (Germany)

14.1. UN number:

14.2. UN proper shipping name:

ORGANIC PEROXIDE TYPE C, SOLID, TEMPERATURE

CONTROLLED(Di-(4-tert-butylcyclohexyl)-

peroxydicarbonate, <= 100%)

14.3. Transport hazard class(es):

5.2

14.4. Packing group:

14.5. Environmental hazards (Marine

UN 3114

pollutant):

14.6. Special precautions for user: EmS:

Yes F-F,S-R

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"Separated from" acids and alkalis.

Protected from sources of heat.

Temperature-controlled transport.

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: for transportapproval see regulatory information

### 15. Regulatory information

#### **US Federal Regulations**

## **OSHA**

If listed below, chemical specific standards apply to the product or components:

None listed

#### Clean Air Act Section (112)

If listed below, components present at or above the de minimus level are hazardous air pollutants:

None listed

## **CERCLA Reportable Quantities**

If listed below, a reportable quantity (RQ) applies to the product based on the percent of the named component:

None listed

# SARA Title III Section 311/312 Hazard Categories

The product meets the criteria only for the listed hazard classes:

- Acute Health Hazard
- Reactivity Hazard

## SARA Title III Section 313 Reportable Substances

If listed below, components are subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

None listed

#### Toxic Substances Control Act (TSCA)

If listed below, non-proprietary substances are subject to export notification under Section 12 (b) of TSCA:

None listed

## State Regulations

#### California Proposition 65

A warning under the California Drinking Water Act is required only if listed below:

None listed

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## International Chemical Inventory Status

Unless otherwise noted, this product is in compliance with the inventory listing of the countries shown below. For information on listing for countries not shown, contact the Product Regulatory Services Department.

| • | Europe (EINECS/ELINC: | S) listed/registered |
|---|-----------------------|----------------------|
|   | USA (TSCA)            | listed/registered    |
|   | Canada (DSL)          | listed/registered    |
| • | Australia (AICS)      | listed/registered    |
|   | Japan (MITI)          | listed/registered    |
| • | Philippines (PICCS)   | listed/registered    |
| • | China                 | listed/registered    |
| • | Korea                 | listed/registered    |
| • | New Zealand           | listed/registered    |

An employer using HMIS/NFPA labeling must through training ensure that its employees are fully aware of the hazards of the chemicals used.

## **HMIS Ratings**

2 Health: Flammability: 2 Physical Hazard

## **NFPA Ratings**

Health: 2 Flammability : 1 2 Reactivity:

#### 16. Other information

## **Further information**

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Changes since the last version are highlighted in the margin. This version replaces all previous versions.

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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UNITED INITIATORS driving your success

Legend

ACC American Chemistry Council

**ACGIH** American Conference of Governmental Industrial Hygenists

ACS Advisory Committee on Sustainability

ADI Acceptable Daily Intake

American Society for Testing and Materials **ASTM** 

Adaptation to Technical Progress ATP

**BCF** Bioconcentration factor BOD Biochemical oxygen demand

C.C. closed cup

CAO Cargo Aircraft Only

Carc Carcinogen

CAS Chemical Abstract Services

CON Canada

Canadian Environmental Protection Act CEPA

CERCLA Comprehensive Environmental Response - Compensation and Liability Act

CFR Code of Federal Regulations

carcinogenic-mutagenic-toxic for reproduction CMR

COD Chemical oxygen demand

DIN German Institute for Standardization DMEL Derived minimum effect level DNEL Derived no effect level DOT Department of Transportation half maximal effective concentration **EC50** Environmental Protection Agency **EPA** ErC50 Reduction of Growth Rate

Emergency Response Guide Book **ERG** 

Food and Drug Administration FDA

Globally Harmonized System of Classification and Labelling of Chemicals (GHS) GHS

Good Laboratory Practice GLP **GMO** Genetic Modified Organism HCS Hazard Communication Standard **HMIS** Hazardous Materials Identification System **IARC** International Agency for Research on Cancer International Air Transport Association IATA

IBC Intermediate Bulk Container

ICAO-TI International Civil Aviation Organization- Technical Instructions

ICCA International Council of Chemical Association

Identification number m

IMDG International Maritime Dangerous Goods

**IUPAC** International Union of Pure and Applied Chemistry ISO International Organization For Standardization

50 % Lethal Concentration LC50

LD50 50 % Lethal Dose LC50 or EC50 L(E)C50

LOAEL Lowest observed adverse effect level

Lowest observed effect level LOEL

MARPOL International Convention for the Prevention of Pollution from Ships

National Fire Protection Association **NFPA** NOAEL No observed adverse effect level NOEC no observed effect concentration

no observed effect level NOEL

open cup o. c.

OECD Organisation for Economic Cooperation and Development

OEL Occupational Exposure Limit

**OSHA** Occupational Safety and Health Administration

PBT Persistent, bioaccumulative, toxic PEC Predicted effect concentration PNEC Predicted no effect concentration

RQ Reportable Quantity \$DS Safety Data Sheet

STOT Specific Target Organ Toxicity

United Nations UN

vPvB very persistent, very bioaccumulative

volatile organic compounds vac

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Workplace Hazardous Materials Information System World Health Organization

WHO