

SAFETY DATA SHEET
NOROX® 600 (BCHPC)



UNITED INITIATORS
driving your success

Material no.
Specification **150912**
Order Number

Version **1.0 / US**
Revision date **01/21/2015**
Print Date **02/03/2015**
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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

1.3. Details of the supplier of the safety data sheet

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

1.4. 24 HOUR EMERGENCY TELEPHONE NUMBERS:

CHEMTREC - US & CANADA: 800-424-9300

CHEMTREC INTERNATIONAL: +1 703-527-3887 (collect calls accepted)

Product Regulatory Services : 800-231-2702

2. Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation 29CFR 1910.1200

Organic peroxides	Type C	H242
Skin Sensitisation	Category 1	H317
Chronic aquatic toxicity	Category 3	H412

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: Reaction	P302 + P352 - IF ON SKIN: Wash with plenty of water/ soap. 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	Type C
Skin Sensitisation	Category 1
Chronic aquatic toxicity	Category 3

Other information

This material is classified as hazardous under OSHA regulations.

4. First aid measures

4.1. Description of first aid measures

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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Eye 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

4.3. 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.

Unsuitable extinguishing media: High volume water jet.

5.2. 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.

5.3. 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.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

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.

6.3. Methods and material for containment and cleaning up

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.

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.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

physical state	solid
Colour	white
Form	solid, powder
Odour	characteristic
Odour Threshold	not applicable
pH	not applicable
Melting point/range	82 °C Decomposes before melting.
Initial boiling point and boiling range	not applicable Decomposes
Flash point	not applicable
Evaporation rate	no data available
Flammability (solid, gas)	not applicable

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Lower explosion limit	no data available
Upper 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/cm ³ (20 °C)
Water solubility	insoluble
Solubility/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-accelerating 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
Possibility of hazardous reactions

Product will not undergo hazardous polymerization.
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.

11. Toxicological information

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	Assessment: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Risk of aspiration toxicity	not applicable
Gentotoxicity in vitro	Ames test Salmonella typhimurium negative Method: OECD Test Guideline 471

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Mutagenicity assessment	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/l / 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.

14. 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): 5.2
14.4. Packing group: II
14.5. Environmental hazards (Marine pollutant): --
14.6. Special precautions for user: Yes
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: 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): 5.2
14.4. Packing group: --
14.5. Environmental hazards (Marine pollutant): --
14.6. Special precautions for user: Yes
EmS: 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 transport approval 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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ACC	American Chemistry Council
ACGIH	American Conference of Governmental Industrial Hygienists
ACS	Advisory Committee on Sustainability
ADI	Acceptable Daily Intake
ASTM	American Society for Testing and Materials
ATP	Adaptation to Technical Progress
BCF	Bioconcentration factor
BOD	Biochemical oxygen demand
c.c.	closed cup
CAO	Cargo Aircraft Only
Carc	Carcinogen
CAS	Chemical Abstract Services
CDN	Canada
CEPA	Canadian Environmental Protection Act
CERCLA	Comprehensive Environmental Response – Compensation and Liability Act
CFR	Code of Federal Regulations
CMR	carcinogenic-mutagenic-toxic for reproduction
COD	Chemical oxygen demand
DIN	German Institute for Standardization
DMEL	Derived minimum effect level
DNEL	Derived no effect level
DOT	Department of Transportation
EC50	half maximal effective concentration
EPA	Environmental Protection Agency
ErC50	Reduction of Growth Rate
ERG	Emergency Response Guide Book
FDA	Food and Drug Administration
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
GLP	Good Laboratory Practice
GMO	Genetic Modified Organism
HCS	Hazard Communication Standard
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association
IBC	Intermediate Bulk Container
ICAO-TI	International Civil Aviation Organization- Technical Instructions
ICCA	International Council of Chemical Association
ID	Identification number
IMDG	International Maritime Dangerous Goods
IUPAC	International Union of Pure and Applied Chemistry
ISO	International Organization For Standardization
LC50	50 % Lethal Concentration
LD50	50 % Lethal Dose
L(E)C50	LC50 or EC50
LOAEL	Lowest observed adverse effect level
LOEL	Lowest observed effect level
MARPOL	International Convention for the Prevention of Pollution from Ships
NFPA	National Fire Protection Association
NOAEL	No observed adverse effect level
NOEC	no observed effect concentration
NOEL	no observed effect level
o. c.	open cup
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
SDS	Safety Data Sheet
STOT	Specific Target Organ Toxicity
UN	United Nations
vPvB	very persistent, very bioaccumulative
voc	volatile organic compounds

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WHMIS
WHO

Workplace Hazardous Materials Information System
World Health Organization