

# SAFETY DATA SHEET

## 1. IDENTIFICATION OF THE PREPARATION AND COMPANY

**Product Name and/or Code:** **NOROX TBHP**  
**Chemical name:** Tertiary Butyl Hydroperoxide

**Intended use:** Polymerisation initiator and hardener for unsaturated polyester resin.

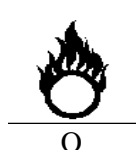
**Name of the company:** Syrgis Performance Initiators AB  
Box 26083  
S-100 41 Stockholm  
Sweden

**Telephone:** +46 8 545 121 60

In case of an emergency: contact tel. +46 8 33 70 43 or National Poison Centre.

## 2. HAZARDS IDENTIFICATION OF THE PREPARATION

**Danger classification:** O = Oxidising  
C = Corrosive



Flammable. Harmful by inhalation, skin contact and if swallowed. Corrosive. Risk of serious damage to eyes. May cause sensitisation by contact to skin. Harmful to aquatic organisms, may cause long-term adverse effects in aquatic environment.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Components	CAS-no	EINECS-no	Conc.%	Symbol/R-phrases
Tert-Butyl-Hydroperoxide	75-91-2	200-915-7	70	C,O/R-10-20/21/22-34-41-43-52/53
Water	7732-18-5	231-791-2	30	none

For the full R-phrases see section 16.

#### 4. FIRST AID MEASURES

**General:**

In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

**Inhalation:**

If overcome by exposure, remove to fresh air immediately, keep patient warm and at rest. Give oxygen or artificial respiration as needed. Give nothing by mouth. Obtain emergency medical attention. Prompt action is essential.

**Skin contact:**

For even minor contact, immediately remove contaminated clothing. Wash skin thoroughly with mild soap and water. Flush with lukewarm water for 15 minutes. If sticky, use waterless cleaner first. Obtain emergency medical attention if necessary.

**Eye contact:**

For even minor eye contact, immediately rinse with clean, fresh water for at least 15 minutes, holding the eyelids apart and seek medical advice if necessary. Prompt action is essential.

**Ingestion:**

If accidentally swallowed obtain immediate medical attention. Keep at rest. Drink lukewarm water or milk, and **DO NOT** induce vomiting. Risk of damage to lungs exceeds poisoning risk.

#### 5. FIRE-FIGHTING MEASURES

Recommended extinguishing media: Water spray. Water fog. CO<sub>2</sub>. Foam for alcohols.

Special exposure hazards:

Vapour can burn in absence of air and may be flammable at either elevated temperature or reduced pressure. Fine sprays/mists may be combustible at temperatures below normal flash point. When evaporated, residual liquid will concentrate in TBHP content and may reach explosive level (>90%). Do not enter fire area without proper protection. See Section 10. Fight fire from safe distance. Burning liquid may release gases, rupture closed containers, spreading fire, increasing risk of burns/injuries. Availability of other combustibles may hasten burning, spreading fire. Use water spray/fog for cooling. Notify authorities if liquid enters sewers or public waters.

#### 6. ACCIDENTAL RELEASE MEASURES

Highly reactive material. Release can cause fire/explosion/health/environmental hazards. Liquids/vapours may ignite/react with other materials. Evacuate and limit access. Equip responders with proper protection. Extinguish all ignition sources. Stop release. Prevent flow to sewers/public waters. Notify fire and environmental authorities. Blanket with fire-fighting foam. Impound/recover large landspill. Soak up small spill with inert solids. On water, material soluble - may float or sink. Contain/minimise dispersion; collect. Disperse residue to reduce aquatic harm. Report per regulatory requirements.

## 7. HANDLING AND STORAGE

### Handling:

Provide adequate ventilation. Keep containers tightly closed when not in use. Do not use near food or drink. Avoid skin and eye contact. Avoid breathing vapours. Wear personal protection equipment recommended in section 8. Isolate from sources of heat, sparks and open flame. No sparking tools should be used. Preparation may charge electrostatically: always use earthing leads when transferring from one container to another. Dilution is not recommended. Never dilute with acetone.

### Storage:

Store in accordance with local regulations. Store in original package, in cool, well ventilated place away from sources of heat, fires, sparks and direct sunlight. For maximum shelf life we recommend to store the product at temperatures not higher than 25°C. At higher temperatures the shelf life will be reduced. For safety reasons the storage temperature should not exceed 35°C. The product should not be stored below 0°C.

The product must never be stored together with accelerators such as dryers, heavy metal compounds etc. Avoid contact with rust. Keep away from sources of ignition. Keep away from oxidising agents, from strongly alkaline and strongly acid materials. Rotate stock using the oldest material first. Prevent unauthorised access.

## 8. EXPOSURE CONTROL/PERSONAL PROTECTION

### Engineering Measures.

Provide adequate ventilation. Where reasonably practicable this should be achieved by the use of local exhaust ventilation and good general extraction. Use clean equipment and tools of inert material such as stainless steel, polyethylene, polypropylene, and glass. All equipment should be earthed. Use Peleus ball when pipetting the peroxide solutions.

### Exposure Limits:

Component	CAS-no.	Limit/ Type	ACGIH / Type
Tert-Butyl Hydroperoxide	75-91-2	1 ppm / 8 hours TWA/ LCC OEL/ 2001	

No EEC-list available.

TWA = Time Waited Average

### Personal Protection.

#### Respiratory protection:

Gas mask with filter A (brown, organic substances) recommended.

#### Eye protection:

Use safety eyewear designed to protect against splash of liquids. Splashes in the eyes may cause serious eye damage.

#### Hand protection:

Protective gloves recommended (solvent resistant, butylrubber or neoprene). Barrier creams may help to protect the exposed areas of the skin, they should however not be applied once exposure has occurred.

**Skin protection:**

Personnel should wear antistatic clothing made of natural fibre or of high temperature resistant synthetic fibre. All parts of the body should be washed after contact.

**Industrial hygiene:**

Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Use good personal hygiene practices. Wash hands before eating, drinking, smoking, or using toilet facilities. Promptly remove soiled clothing, wash thoroughly before reuse.

**Others:**

Both local exhaust and general room ventilation are usually required.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

<b>Physical state at 25°C</b>	Liquid
<b>Colour</b>	Colourless
<b>Odour</b>	pungent. Odour threshold: 1 ppm
<b>Freezing point (°C), 1 bar</b>	-2
<b>Initial boiling point (°C), 1 bar</b>	96
<b>Density at 25°C (kg/m<sup>3</sup>)</b>	930
<b>Vapour pressure (mm Hg)</b>	23 (21°C)
<b>Relative vapour density</b>	3.1 (air=1)
<b>Viscosity at 25°C (mPas)</b>	4
<b>Solubility in water</b>	15 (% weight)
<b>pH</b>	4.3
<b>Flash point (°C)</b>	41 Closed Cup
<b>SADT (°C)</b>	80
<b>Auto-ignition temperature (°C)</b>	238
<b>Flammability limits in air:</b>	
<b>-Lower (% vol)</b>	5
<b>-Upper (% vol)</b>	100

**10. STABILITY AND REACTIVITY**

**Hazardous decomposition products:** High temperatures/chemical contamination can liberate gaseous oxygen causing hazardous pressure build-up. Incomplete combustion may generate hazardous vapours including carbon monoxide and isobutylene.

**Materials and conditions to avoid:**

Violent reactions can occur if the product comes in contact with cobalt accelerators or other peroxide accelerators /promoters, rust, heavy metal compounds, brass, galvanized steel, acetone, reducing or oxidizing agents and strong acids or bases. Therefore these materials must be avoided. Grinding dust and dirt must be avoided as well. Avoid higher temperatures and direct sunlight. Confinement in stainless steel equipments (tanks, vessels, pipes etc) must also be avoided.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

#### Route of Exposure

- Inhalation: Over-exposure may cause irritation to the respiratory tract and other mucous membranes.
- Skin contact: Although no appropriate human or animal effects data are known to exist, this material is expected to be a health hazard by skin absorption. May cause skin irritation, blistering, ulcers and deep scarring.
- Eye contact: May cause destruction of eye tissue.
- Ingestion: Swallowing this material may result in health hazard.

Chronic health effects: TBHP is mutagenic in In-Vitro assays. TBHP caused mutations in Ames tester strains TA 1535, TA 98, TA 100. TBHP was also mutagenic in the mouse lymphoma assay system which was the subject of TSCA section 8(e) notice. Significantly, TBHP did not demonstrate mutagenic potential in a whole animal, as evaluated in the rat bone marrow cytogenetics assay even after repeated exposure to toxic levels of TBHP. TBHP was not positive in the C 3H/10T-1/2 cell transformation assay, a test which has been interpreted to be an In-Vitro estimation of carcinogenic potential. In summary, TBHP has demonstrated mutagenic potential in bacterial and mammalian cells in culture, but was not mutagenic in assay system in an intact animal.

The following data details the test results:

Test	Specie	Result	Comment
Ames assay	in-vitro	positive	TA-98, -100, -1537
Mouse lymphoma	in-vitro	positive	TSCA-section 8(e)
Rat bone marrow	rat	negative	5-day exposure to 100ppm/6hr/day
Cell transformation	in-vitro	negative	C3H/10T-1/2

Special health effects: This material or its emissions may affect mucous tissue and/or aggravate mucous membrane dysfunction.

<b>TBHP 70%</b>	<b>LD50 (Oral)</b>	<b>Rat</b>	<b>560 mg/kg</b>
<b>TBHP</b>	<b>LC50 (Inhalation)</b>	<b>Rat</b>	<b>500 ppm/ 4 hours</b>
	<b>LD50 (Oral)</b>	<b>Rat</b>	<b>406 mg/kg</b>
	<b>LD50 (skin contact)</b>	<b>Rabbit</b>	<b>460 mg/kg</b>

TBHP is mutagenic in In-Vitro and Ames tests. TBHP is not proved to be a carcinogenic today but may be considered as a carcinogenic chemical substance in a future classification.

## 12. ECOLOGICAL INFORMATION

The product should not be allowed to enter drains of water courses.

#### Toxicity for fish:

LC50/96 hours                      Cyprinidae      42.3 mg/l

#### Toxicity for invertebrates:

EC50/48 hours                      waterflea      20.1 mg/l  
NOEC50/48 hours                      waterflea      10 mg/l

Toxicity for algs:  
 EC50/72 hours                Selenastrum 2.1 mg/l  
 NOEC/72 hours                Selenastrum 0.32 mg/l

The product may cause long-term adverse effects in aquatic environment.  
 The product is not expected to bioaccumulate. But it's expected to be resistant to biodegradation.

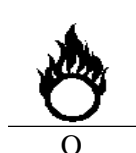
### 13. DISPOSAL CONSIDERATIONS

Contaminated product/soil/water containing undecomposed reactive components may be hazardous waste. The producer recommends destruction of both peroxide rests and empty packaging by combustion under controlled forms. Use registered transporters.

### 14. TRANSPORT INFORMATION

<b>Proper Shipping Name:</b> Organic peroxide type F, liquid (tert-Butyl Hydroperoxide)	
UN 3109	<b>Class:</b> 5.2
	<b>Label:</b> 5.2
	<b>Subsidiary Risk Label:</b> 8
	<b>Packaging group:</b> II
<b>Marine pollutant:</b> No	<b>EmS:</b> F-J, S-R

### 15. REGULATORY INFORMATION



**Danger classification:** O = Oxidising  
 C = Corrosive

**Contains:** Tertiary Butyl Hydroperoxide

**R phrases:**

**R-10** Flammable.  
**R-20/21/22** Harmful by inhalation, skin contact and if swallowed.  
**R-34** Corrosive.  
**R-41** Risk of serious damage to eyes.  
**R-43** May cause sensitisation by contact to skin.  
**R52/53** Harmful to aquatic organisms, may cause long-term adverse effects in aquatic environment.

**S phrases:**

- S-3/7** Keep container tightly closed in a cool place.  
**S-14** Keep away from combustible materials.  
**S-24/25** Avoid contact with skin and eyes.  
**S-36/37/39** Wear suitable protective clothing, gloves and eye/face protection.  
**S-45** In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

## 16. OTHER INFORMATION

In addition from section 2:

R phrases:

- R-10** Flammable.  
**R-20/21/22** Harmful by inhalation, skin contact and if swallowed.  
**R-34** Corrosive.  
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