

Material safety data sheet



TRIGONOX 21S

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product label name tert-Butyl peroxy-2-ethylhexanoate	
Supplier Akzo Nobel Polymer Chemicals LLC 525 West Van Buren Street Chicago, IL 60607-3823 www.akzonobel.com/polymer	
Emergency telephone +1-914-693-6946 Chicago, IL USA	transportation emergency CHEMTREC - USA: 1-800-424-9300 CANUTEC - CANADA: 1-613-996-6666
Intended use polymerization initiator	
Date of last issue / Revision number 2007/12/05 / 2.83	
Chemical family peroxides	

2. HAZARDS IDENTIFICATION

Emergency overview DANGER! REFRIGERATED ORGANIC PEROXIDE - MAINTAIN COOLING HEAT OR CONTAMINATION MAY CAUSE VIOLENT DECOMPOSITION COMBUSTIBLE LIQUID AND VAPOR MAY CAUSE EYE, SKIN, AND RESPIRATORY TRACT IRRITATION Peroxides and peroxide decomposition products are flammable and can ignite with explosive force if confined.	
Appearance colorless clear liquid with faint odor.	
Health effects Skin contact and inhalation are the primary routes of exposure to this product. Inhalation of fumes or vapors may cause irritation to the nose, throat and lungs. May cause mild skin irritation. Eye contact may cause mild irritation. If swallowed, this product may cause irritation of the mouth, throat, esophagus and stomach.	
Carcinogenicity	
Description	Applicable
IARC	no
NTP	no
OSHA	no
ACGIH	no

3. COMPOSITION/INFORMATION ON INGREDIENTS

Information on hazardous ingredients
Chemical description tert-Butyl peroxy-2-ethylhexanoate
Composition / information on ingredients

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Number	% w/w	CAS-number	Chemical name
1	> 97	003006-82-4	tert-Butyl peroxy-2-ethylhexanoate

4. FIRST AID MEASURES

First aid
General In all cases of doubt, or when symptoms persist, seek medical attention.
Inhalation Remove to fresh air. If not breathing, give artificial respiration. Oxygen may additionally be given, by trained personnel, if it is available. Get medical attention if symptoms occur.
Skin Flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation develops and persists. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.
Eye Immediately flush eyes with plenty of water. If easy to do, contact lenses should be removed during the flushing, by trained personnel. Occasionally hold the eyelids apart during the flushing to ensure rinsing the entire surface of the eye and lids with water. Get medical attention if irritation develops and persists.
Ingestion Call a physician or a poison control center immediately. Induce vomiting only if directed by medical personnel. The patient should lie on their left side while vomiting to reduce the risk of aspiration. Never give anything by mouth to an unconscious or convulsing person.
Advice to physician There are no data available that address medical conditions that are generally recognized as being aggravated by exposure to this material. Attending physician should treat exposed patients symptomatically.

5. FIRE-FIGHTING MEASURES

Extinguishing media waterspray, foam, sand, dry chemical powder, CO ₂ .
Unsuitable extinguishing media halones.
Hazardous decomposition / combustion products CO ₂ , Carbon monoxide. tert-Butanol, Heptane, 3-tert-Butoxyheptane.
Protective equipment Firefighters must wear fire resistant protective equipment. Wear approved respirator and protective gloves.
Other information Evacuate all non-essential personnel. Extinguish a small fire with powder or carbon dioxide then apply water to prevent re-ignition. Cool closed containers with water. Water used to extinguish a fire should not be allowed to enter the drainage system or water courses. After a fire, ventilate thoroughly the area and soak with water, clean the walls and metallic surfaces.
Fire and explosion hazard CAUTION: reignition may occur. Decomposition under effect of heating (See also Section Hazardous decomposition products). If involved in a fire, it will support combustion. Vapours may form explosive mixtures with air. In case of fire and/or explosion do not breathe fumes.

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NFPA ratings	
Hazard classes	Rating
Health	1
Flammability	3
Reactivity	2
Other information	

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Do not breathe fumes/vapour. For personal protection see Section 8.
Environmental precautions Do not allow to enter drains or water courses.
Methods for cleaning up Stop leakage if possible. Eliminate all sources of ignition, and do not generate flames or sparks. Transfer remaining product from leaking container to a clean and suitable container. Cover the remainder with inert absorbent (e.g. vermiculite) for disposal. Keep contents moist. The waste should NOT be confined. Flush surroundings with large amounts of water and soap.
Other information CAUTION: re-ignition may occur. Vapours are heavier than air and may spread along floors. Vapours may travel to a source of ignition and flash back. Evacuate personnel to safe area.

7. HANDLING AND STORAGE

Handling Never weigh out in the storage room. When using do not eat, drink or smoke. Do not pipet by mouth. Do not breathe fumes/vapour. Handle in well ventilated areas. Eliminate all sources of ignition, and do not generate flames or sparks. Keep away from reducing agents (e.g. amines), acids, alkalis and heavy metal compounds (e.g. accelerators, driers, metal soaps). Keep product and emptied container away from heat and sources of ignition. Confinement must be avoided. Avoid shock and friction. Avoid Incompatible materials (See Section 10).
Fire and explosion prevention Use explosion protected equipment. Keep away from sources of ignition - No smoking. Use non-sparking tools in area's where explosive vapor air mixtures may occur. Do not cut or weld on or near this container even when empty.
Storage requirements Store in accordance with local/national regulations. Keep away from food, drink and animal feedingstuffs. Store in a dry well ventilated place away from sources of heat and direct sunlight. Store separate from other chemicals. Keep only in the original container. Keep container upright to prevent leakage.
Storage
Avoid temperatures below -30 °C. If product freezes or separates, contact Akzo Nobel.
For maximum quality store below: 10 °C.
For safety, store below 20 °C.
Other information It is recommended to use electrical equipment of temperature group T3. However, autoignition can never be excluded. Wash hands thoroughly after handling or contact. Keep working clothing separately and do not take them home.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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Engineering controls Ensure good ventilation and local exhaustion of the working area. Explosion proof ventilation recommended.
Personal protection
Respiratory The usual precautionary measures for handling chemicals should be observed.
Hand Wear suitable protective gloves of neoprene or synthetic rubber.
Eye Wear eye/face protection. A face shield is preferred over goggles.
Skin and body Wear suitable protective clothing.
Other information Emergency-shower and facilities for rinsing eyes must be accessible. Launder clothes before reuse.

In this country no exposure limit has been established

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance liquid
Color colorless clear
Odor faint
Boiling point/range not applicable (Decomposes)
Melting point/range Solidifies at or below -30°C / -22°F
Flash point Above the SADT value
Flammability Decomposition products may be flammable.
Explosive properties yes
Oxidizing properties not applicable
Vapour pressure 0.12 kPa (65°C / 149°F)
Density 900 kg/m ³ (20°C / 68°F) Specific gravity = 0.900 (20°C / 68°F)
Bulk density not applicable
Solubility in water immiscible (20°C / 68°F)
Solubility in other solvents Miscible with aliphatic solvents.

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pH value neutral
Partition coefficient n-octanol/water not determined
Relative vapour density (air=1) not determined
Viscosity 4.3 mPa.s (20°C / 68°F)
Active oxygen content 7.17 %
Peroxide content 97 %
Autoignition temperature Test method not applicable (See Section 7)
SADT 35 °C. See also Section 10.
Explosion limits not determined
Volatile % not determined

10. STABILITY AND REACTIVITY

Stability
<p>SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the following temperature: 35 °C. Contact with incompatible substances can cause decomposition at or below the SADT 35 °C.</p> <p>To insure against possible exothermic self-accelerating decomposition, storage temperatures must not exceed emergency temperature of 25 °C.</p>
Conditions to avoid
<p>Under no circumstances should this product be exposed to temperatures above the emergency temperature of 25 °C. If the product temperature exceeds 25 °C all available means shall be used to bring the temperature under control and the emergency procedures shall be started. Emergency procedures will vary depending on conditions. Contact Akzo Nobel for assistance with developing an emergency response plan.</p> <p>Avoid temperatures below -30 °C.</p> <p>To maintain quality store in original closed container below: 10 °C.</p> <p>Avoid shock and friction. Confinement must be avoided.</p>
Incompatibles
<p>Avoid contact with rust, iron and Copper. Contact with incompatible materials such as acids, alkalis, heavy metals and reducing agents will result in hazardous decomposition. Do not mix with peroxide accelerators. Use only Stainless steel 316, PP, polyethylene or glass-lined equipment.</p>
Polymerization
<p>Polymerization does not occur.</p>
Hazardous decomposition products
<p>Hazardous decomposition products; tert-Butanol, Heptane, 3-tert-Butoxyheptane.</p>

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Other information

Emergency procedures will vary depending on conditions. The customer must have an emergency response plan in place. Contact Akzo Nobel for assistance with developing an emergency response plan.

11. TOXICOLOGICAL INFORMATION

tert-Butyl peroxy-2-ethylhexanoate

Acute toxicity

Oral LD50

rat: > 10.000 mg/kg.
(Based on similar products)

Dermal LD50

rabbit: 16818 mg/kg
(Based on similar products)

Inhalation LC50

rat; > 200 mg/l (4 hours)
(Based on similar products)

Irritation

Skin

Mildly irritating (24 hours exposure time)

Eye

Mildly irritating

Sensitization

Not sensitizing

Genotoxicity

Ames test: Not mutagenic

12. ECOLOGICAL INFORMATION

tert-Butyl peroxy-2-ethylhexanoate

Ecotoxicity

fish

Acute toxicity, 96h-LC50 = 8.7 mg/l. (Danio rerio.)

bacteria

Activated sludge respiration inhibition test EC50 = 64 mg/l.

Fate

Degradation Biotic

Readily biodegradable (Closed bottle test).

13. DISPOSAL CONSIDERATIONS

Product

Due to the high risk of contamination recycling/recovery is not recommended. Waste disposal in accordance with regulations (most probably controlled incineration).

Contaminated packaging

According to local regulations. Emptied container might retain product residues. Follow all warnings even after the container is emptied.

Other information

For further advice contact manufacturer.

14. TRANSPORT INFORMATION

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<i>Land transport</i>
Class 5.2
TREM-Card or ERG number NORTH AMERICAN ERG NO: 148
UN number 3113
Proper Shipping Name Organic peroxide type C, liquid, temperature controlled (tert-Butyl peroxy-2-ethylhexanoate, 97%)
Required labels 5.2
EMERGENCY TEMPERATURE: 25 °C.
CONTROL TEMPERATURE: 20 °C.
The control temperature is the maximum temperature at which the formulation can be transported safely during a prolonged period of time.

<i>Sea transport (IMO / IMDG-code)</i>
Class 5.2
UN number 3113
EMS F-F, S-R
Marine pollutant no
Proper Shipping Name Organic peroxide type C, liquid, temperature controlled (tert-Butyl peroxy-2-ethylhexanoate)
Other information Label(s): 5.2
EMERGENCY TEMPERATURE: 25 °C.
CONTROL TEMPERATURE: 20 °C.
The control temperature is the maximum temperature at which the formulation can be transported safely during a prolonged period of time.

<i>Air transport (ICAO-TI / IATA-DGR)</i>
UN number Forbidden

15. REGULATORY INFORMATION

Product and or components listed below are subject of the following
tert-Butyl peroxy-2-ethylhexanoate

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New Jersey R-T-K Hazard. Sub.	yes
Toxic Subst. Cont. Act -listed	yes
Non-Domestic Subst.List-Canada	no
Domestic Substance List-Canada	yes

Hazard classes	
Description	Applicable
Hazard Rating Source	HMIS
HMIS Health	1
HMIS Flammability	2
HMIS Reactivity	2
WHMIS Hazard classes	B-3,C,D-2B,F

Other regulatory information

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.

16. OTHER INFORMATION

History
Other information TRIGONOX: This is a registered trademark of Akzo Nobel Chemicals BV or any of its affiliated companies in one or more territories in the world.
Date of printing/ pdf file generated 2009/05/27
Revision 2.83
Composed by N. Shoshenskiy, Regulatory Affairs - North America. J.W. Wessels - Regulatory Affairs - Europe.
Changes were made in section 9, Vapour pressure
<small>The information in this material safety data sheet should be provided to all who will use, handle, store, transport or otherwise be exposed to this product. All information concerning this product and/or suggestions for handling and use contained herein are offered in good faith and are believed to be reliable as of the date of publication. However, no warranty is made as to the accuracy of and/or sufficiency of such information and/or suggestions as to the merchantability or fitness of the product for any particular purpose, or that any suggested use will not infringe any patent. Nothing in here shall be construed as granting or extending any license under any patent. Buyer must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. The information contained herein supersedes all previously issued bulletins on the subject matter covered. If the date on this document is more than three years old, call to make certain that this sheet is current.</small>