

TRIGONOX 524

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

Product label name Mixture of acetylacetone peroxide and tert-butyl peroxybenzoate, in solvent mixture	
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 Curing agent	
Date of last issue / Revision number 2009/08/25 / 4.02	
Chemical family peroxides	

2. HAZARDS IDENTIFICATION

Emergency overview DANGER! ORGANIC PEROXIDE HEAT OR CONTAMINATION MAY CAUSE HAZARDOUS DECOMPOSITION COMBUSTIBLE LIQUID AND VAPOR CAUSES EYE IRRITATION MAY CAUSE SKIN IRRITATION MAY CAUSE ALLERGIC SKIN REACTION CONTAINS MATERIAL WHICH MAY CAUSE HEADACHE, DIZZINESS OR NAUSEA CONTAINS MATERIAL WHICH MAY CAUSE LIVER AND KIDNEY DAMAGE BASED ON ANIMAL DATA 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, eye 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. Overexposure may cause central nervous system depression with drowsiness, dizziness, headache and nausea. Skin contact may cause moderate irritation. May cause sensitization by skin contact. Eye contact may cause severe 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

TRIGONOX 524

Information on hazardous ingredients			
Chemical description Mixture of acetylacetone peroxide and tert-butyl peroxybenzoate, in solvent mixture			
Composition / information on ingredients			
Number	% w/w	CAS-number	Chemical name
1	15 - 40	000614-45-9	tert-Butyl peroxybenzoate
2	10 - 25	037187-22-7	Acetylacetone peroxide
3	15 - 40	000123-42-2	Diacetone alcohol
4	5 - 10	000123-54-6	Acetylacetone
5	3 - 7	007722-84-1	Hydrogen peroxide
6	3 - 7	000111-46-6	Diethylene glycol
7	1 - 5	007732-18-5	Water

4. FIRST AID MEASURES

Symptoms and effects Irritating to eyes and skin. May cause sensitization by skin contact.	
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	Immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if irritation 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. 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 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 Persons with pre-existing skin, eye, or respiratory disease may be at increased risk from the irritant or allergic properties of this material. Attending physician should treat exposed patients symptomatically.	

5. FIRE-FIGHTING MEASURES

Extinguishing media waterspray, alcohol resistant foam, sand, dry chemical powder, CO ₂ .
Unsuitable extinguishing media halones.

TRIGONOX 524

<p>Hazardous decomposition / combustion products CO₂, Carbon monoxide. Benzoic acid, tert-Butanol, Acetone, Benzene, Methane, Ethane, Acetophenone, Mixture of aliphatic acids.</p>
<p>Protective equipment Firefighters must wear fire resistant protective equipment. Wear approved respirator and protective gloves.</p>
<p>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.</p>
<p>Fire and explosion hazard CAUTION: re-ignition 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.</p>

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

6. ACCIDENTAL RELEASE MEASURES

<p>Personal precautions Do not breathe fumes/vapor. Avoid contact with eyes. For personal protection see Section 8.</p>
<p>Environmental precautions Do not allow to enter drains or water courses.</p>
<p>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.</p>
<p>Other information CAUTION: re-ignition may occur. Vapors 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.</p>

7. HANDLING AND STORAGE

<p>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/vapor. 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 contact with eyes. Avoid Incompatible materials (See Section 10).</p>
<p>Fire and explosion prevention Use explosion protected equipment. Keep away from sources of ignition - No smoking. Vapors are heavier than air and may spread along floors. 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.</p>
<p>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.</p>

TRIGONOX 524

Storage	
	Avoid temperatures below -5 °C. If product freezes or separates, contact Akzo Nobel.
	For maximum quality store below: 25 °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

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.
Skin and body	Wear suitable protective clothing.
Other information	
Emergency-shower and facilities for rinsing eyes must be accessible. Launder clothes before reuse.	

Diacetone alcohol		
OSHA TLV/TWA		240 mg/m ³
ACGIH TLV/TWA		50 ppm
NIOSH REL/TWA		240 mg/m ³
NIOSH IDLH		1800 ppm
Hydrogen peroxide		
OSHA TLV/TWA		1.4 mg/m ³
ACGIH TLV/TWA		1 ppm
NIOSH REL/TWA		1.4 mg/m ³
NIOSH IDLH		75 ppm
Diethylene glycol		
AIHA WEEL/TWA		10 mg/m ³

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	liquid
Color	colorless clear
Odor	faint
Boiling point/range	not applicable (Decomposes)

TRIGONOX 524

Melting point/range Solidifies at or below -5°C / 23°F
Flash point Above the SADT value
Flammability Decomposition products may be flammable.
Explosive properties no
Oxidizing properties not applicable
Vapor pressure not determined
Density 1045 kg/m ³ (20°C / 68°F) Specific gravity = 1.045 (20°C / 68°F)
Bulk density not applicable
Solubility in water Partly miscible with water (20°C / 68°F)
Solubility in other solvents Soluble in most organic solvents
pH value slightly acidic
Partition coefficient n-octanol/water not determined
Relative vapor density (air=1) not determined
Viscosity 13 mPa.s (20°C / 68°F)
Active oxygen content 4.7-5.0 %
Peroxide content 46.8-49.8 %
Autoignition temperature Test method not applicable (See Section 7)
SADT 60 °C. See also Section 10.
Explosion limits not determined
Volatile % not determined

10. STABILITY AND REACTIVITY

Stability
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: 60 °C. Contact with incompatible substances can cause decomposition at or below the SADT 60 °C.

TRIGONOX 524

Conditions to avoid	
	Avoid temperatures below -5 °C.
	To maintain quality store in original closed container below: 25 °C.
	Avoid shock and friction. Confinement must be avoided.
Incompatibles	
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 . Contact Akzo Nobel for more information.	
Polymerization	
Polymerization does not occur.	
Hazardous decomposition products	
Hazardous decomposition products; Benzoic acid, tert-Butanol, Acetone, Benzene, Methane, Ethane, Acetophenone, Mixture of aliphatic acids.	
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

No experimental toxicological data on the preparation as such available. The following data are applicable to the ingredient(s) listed below.	
tert-Butyl peroxybenzoate	
	Acute toxicity
	Oral LD50 mouse:> 2000 mg/kg
	Dermal LD50 mouse:> 2000 mg/kg
	Inhalation LC50 rat: >200 mg/l (4 hours)
	Irritation
	Skin Moderately irritating
	Eye Mildly irritating
	Sensitization Not sensitizing (guinea pig)
	Genotoxicity Ames test : mutagenic. In vivo micronucleus test : Not mutagenic
	Other toxicological information in vitro cytogenetic test : clastogenic
Acetylacetone peroxide, 33 % in Diethylene glycol and Diacetone alcohol	
	Acute toxicity
	Oral LD50 rat: >2000 mg/kg
	Dermal LD50 rat:> 2000 mg/kg

TRIGONOX 524

Inhalation LC50 > 13.1 mg/l (1 hours; aerosols)
Irritation
Skin Non-irritating
Eye Moderately irritating
Sensitization Sensitization possible by skin contact
Genotoxicity No data available
Diacetone alcohol
Acute toxicity
Oral LD50 rat: 4000 mg/kg
Dermal LD50 rabbit 13.500 mg/kg
Inhalation LC50 mouse 500-1900 mg/m ³
Irritation
Skin Mildly irritating
Eye Severely irritating
Genotoxicity Ames test: Not mutagenic
Acetylacetone
Acute toxicity
Oral LD50 rat:1000 mg/kg
Irritation
Skin Non-irritating
Diethylene glycol
Acute toxicity
Oral LD50 Harmful if swallowed. Probable oral lethal dose (human): 0.5 - 5 g/kg
Chronic toxicity / Carcinogenicity The latter effects known may include liver damage, kidney damage, and central nervous system depression
Other toxicological information The mandatory EU labelling has been followed.

12. ECOLOGICAL INFORMATION

TRIGONOX 524

No experimental ecological data are available on the preparation as such. The following data are applicable to the ingredient(s) listed below.

tert-Butyl peroxybenzoate

Ecotoxicity

fish

Acute toxicity, 96h-LC50 = 8.6 mg/l. (Poecilia reticulata.)

algae

72h-IC50 : 1.3 mg/l.

bacteria

Activated sludge respiration inhibition test EC50 = 43 mg/l.

Fate

Degradation Biotic

Readily biodegradable (Closed bottle test).

Fate

Log Pow = 3.0

Diacetone alcohol

Ecotoxicity

fish

Lepomis macrochirus: 96h-LC50: 420 ppm

bacteria

Activated sludge respiration inhibition test EC50 = 17 mg/l.

Fate

Degradation Biotic

Biodegradable.

Other information

Bio Concentration Factor (BCF) = 0.5

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

Land transport

Class

5.2

TREM-Card or ERG number

146

UN number

3103

TRIGONOX 524

Proper Shipping Name Organic peroxide type C, liquid (tert-Butyl peroxybenzoate, <=40% / Acetylacetone peroxide, <=25%)
Other information This product does not contain an environmentally hazardous substance per 49 CFR 172.101, Appendix A.
Required labels 5.2

Sea transport (IMO / IMDG-code)
Class 5.2
UN number 3103
EMS F-J, S-R
Marine pollutant no
Proper Shipping Name Organic peroxide type C, liquid (tert-Butyl peroxybenzoate / Acetylacetone peroxide)
Other information Label(s): 5.2

Air transport (ICAO-TI / IATA-DGR)
UN number 3103
Class 5.2
Proper Shipping Name Organic peroxide type C, liquid (tert-Butyl peroxybenzoate / Acetylacetone peroxide)
Other information Label(s); 5.2

15. REGULATORY INFORMATION





Product and or components listed below are subject to the following	
tert-Butyl peroxybenzoate	
CERCLA Hazardous Substance	
Massachusetts Substance List	yes
New Jersey R-T-K Hazard. Sub.	yes
Penn. Hazardous Substance list	yes
Toxic Subst. Cont. Act -listed	yes
Non-Domestic Subst.List-Canada	no
Domestic Substance List-Canada	yes
Connecticut Hazardous Material Survey	yes

TRIGONOX 524

Rhode Island Hazardous Substances	yes
Acetylacetone peroxide	
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
Connecticut Hazardous Material Survey	yes
Diacetone alcohol	
Massachusetts Substance List	yes
New Jersey R-T-K Hazard. Sub.	yes
Penn. Hazardous Substance list	yes
Toxic Subst. Cont. Act -listed	yes
Non-Domestic Subst.List-Canada	no
Domestic Substance List-Canada	yes
California Hazardous Substances	yes
Connecticut Hazardous Material Survey	yes
Illinois Toxic Substances Disclosure to Es	yes
Minnesota Hazardous Substance	yes
Rhode Island Hazardous Substances	yes
US TSCA 12B Registration	yes, One time per country
Acetylacetone	
Massachusetts Substance List	yes
New Jersey R-T-K Hazard. Sub.	yes
Penn. Hazardous Substance list	yes
Toxic Subst. Cont. Act -listed	yes
Non-Domestic Subst.List-Canada	no
Domestic Substance List-Canada	yes
US TSCA 12B Registration	yes, One time per country
Hydrogen peroxide	
IARC Carcinogens-Grps. 1,2A,2B	
Massachusetts Substance List	yes
New Jersey R-T-K Hazard. Sub.	yes
Penn. Hazardous Substance list	yes
SARA Title III, Section 302	yes
Toxic Subst. Cont. Act -listed	yes
Non-Domestic Subst.List-Canada	no
Domestic Substance List-Canada	yes
California Hazardous Substances	yes
Connecticut Hazardous Material Survey	yes
Illinois Toxic Substances Disclosure to Es	yes
Louisiana RTK Reporting	yes
Minnesota Hazardous Substance	yes
New York Hazardous Substances	yes
Rhode Island Hazardous Substances	yes
Diethylene glycol	

TRIGONOX 524

Penn. Hazardous Substance list	yes
Toxic Subst. Cont. Act -listed	yes
Non-Domestic Subst.List-Canada	no
Domestic Substance List-Canada	yes
Minnesota Hazardous Substance	yes
Rhode Island Hazardous Substances	yes
Water	
Toxic Subst. Cont. Act -listed	yes
Non-Domestic Subst.List-Canada	no
Domestic Substance List-Canada	yes

Hazard classes				
Description	Applicable			
EPA Immediate health	yes			
EPA Delayed health	no			
EPA Fire	yes			
EPA Pressure	no			
EPA Reactive	yes			
EHS Material	no			
Hazard Rating Source	HMIS			
HMIS Health	2			
HMIS Flammability	2			
HMIS Reactivity	3			
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.

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TRIGONOX 524

Composed by

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Changes were made in section

14, Land transport

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.