SAFETY DATA SHEET

TRIGONOX 141

Version 1 Revision Date 04/26/2015 Print Date 06/25/2015 US / Z8

1. PRODUCT AND COMPANY IDENTIFICATION

Product name	:	TRIGONOX 141
Product Use Description	:	Polymerization initiator
Company	:	Akzo Nobel Functional Chemicals LLC 525 West Van Buren Chicago IL 60607-3823 USA
Telephone	:	+18008287929
Fax	:	+13125447188
E-mail address	:	RegulatoryAffairs@akzonobel.com
Emergency telephone	:	AkzoNobel: +31 57 06 79211 CHEMTREC - USA: 1-800-424-9300 CANUTEC - CANADA: 1-613-996-6666

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance	liquid
Color	clear, colorless
Odor	faint

GHS Classification

Organic peroxides, Type C

GHS Label element

Hazard pictograms :

Signal Word : Danger

Hazard Statements : H242 Heating may cause a fire.

Precautionary Statements : **Prevention:**
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P220 Keep away from dirt, rust, chemicals in particular.
P234 Keep only in original container.
P280 Wear protective gloves/ eye protection/ face protection.
Response:
P370 + P378 In case of fire: Use water spray, alcohol-resistant

foam, dry chemical or carbon dioxide to extinguish.
Storage:
P403 + P235 Store in a well-ventilated place. Keep cool.
P410 Protect from sunlight.
P411 Store at temperatures not exceeding 20°C/ 68°F.
P420 Store away from other materials.
Disposal:
P501 Dispose of contents/container in accordance with local regulation.

Potential Health Effects

Inhalation	:	Not expected to be irritating.
Skin	:	Not expected to be irritating.
Eyes	:	Not expected to be irritating.
Ingestion	:	Not expected to be irritating.
Aggravated Medical Condition	:	None known.
Symptoms of Overexposure	:	The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Carcinogenicity:

IARC	:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous ingredients

Chemical Name	CAS-No.	Classification	Concentration [%]
2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane	13052-09-0	Org. Perox. C; H242	90 - 100

2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane, neat

For the full text of the H-Statements mentioned in this Section, see Section 16.

4. FIRST AID MEASURES

General advice : Move out of dangerous area.
Consult a physician.
Show this material safety data sheet to the doctor in attendance.

Inhalation : If breathed in, move person into fresh air.

Skin contact : Take off contaminated clothing and shoes immediately.
Rinse immediately with plenty of water.

Eye contact : Rinse with plenty of water.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

Ingestion : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

Notes to physician

Symptoms : The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.

Treatment : Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media : High volume water jet

Specific hazards during fire fighting / Specific hazards arising from the chemical : CAUTION: reignition may occur.
Supports combustion.
Do not use a solid water stream as it may scatter and spread fire.
Water spray may be ineffective unless used by experienced firefighters.
Heating may cause decomposition with release of toxic fumes.

Combustion products	:	Fire will produce smoke containing hazardous combustion products (see section 10).
Special protective equipment for fire-fighters	:	In the event of fire, wear self-contained breathing apparatus.
Further information	:	Use water spray to cool unopened containers.

See also Section 9. Physical and chemical properties: Safety data

6. ACCIDENTAL RELEASE MEASURES

Personal precautions	:	Ensure adequate ventilation. Remove all sources of ignition. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
Environmental precautions	:	Prevent product from entering drains.
Methods for cleaning up / Methods for containment	:	Keep wetted with water. Soak up with inert absorbent material and dispose of as hazardous waste. Confinement must be avoided. Never return spills in original containers for re-use.
Additional advice	:	For personal protection see section 8.

7. HANDLING AND STORAGE

Handling

Advice on safe handling	:	For personal protection see section 8. Do not smoke. Open drum carefully as content may be under pressure.
Advice on protection against fire and explosion	:	Use explosion protected equipment. Keep away from sources of ignition - No smoking. No sparking tools should be used. Keep away from reducing agents (e.g. amines), acids, alkalies and heavy metal compounds (e.g. accelerators, driers, metal soaps). Do not cut or weld on or near this container even when empty. Keep away from combustible material.
Temperature class	:	It is recommended to use electrical equipment of temperature group T3. However, autoignition can never be excluded.

Storage

Requirements for storage areas and containers	:	No smoking. Keep in a well-ventilated place. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards. Keep only in original container. Store away from other materials.
Minimum storage temperature:	:	Avoid temperatures below: -20 °C (-4 °F)

Maximum storage temperature: : 15 °C (59 °F)

Other data : No decomposition if stored and applied as directed.

: If product freezes or separates, contact Akzo Nobel

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Contains no substances with occupational exposure limit values.

Occupational exposure limits of decomposition products

Decomposition products	CAS-No.	Value	Control parameters	Update	Basis	Form of exposure
2-Ethylhexanoic acid	149-57-5, 149-57-5	TWA	5 mg/m3	2007-01-01	ACGIH	Inhalable fraction and vapor
	Further information	:	Teratogenic effects			
Heptane	142-82-5, 142-82-5	TWA	85 ppm 350 mg/m3	2013-10-08	NIOSH REL	
		C	440 ppm 1,800 mg/m3	2013-10-08	NIOSH REL	
	Further information	:	15 minute ceiling value			
		TWA	500 ppm 2,000 mg/m3	1997-08-04	OSHA Z-1	
	Further information	:	(b): The value in mg/m3 is approximate.			
		TWA	400 ppm 1,600 mg/m3	1989-01-19	OSHA P0	
		STEL	500 ppm 2,000 mg/m3	1989-01-19	OSHA P0	
		TWA	400 ppm	2013-03-01	ACGIH	
	Further information	:	Central Nervous System impairment Upper Respiratory Tract irritation			
		STEL	500 ppm	2013-03-01	ACGIH	
	Further information	:	Central Nervous System impairment Upper Respiratory Tract irritation			
Acetone	67-64-1, 67-64-1	TWA	500 ppm	2013-03-01	ACGIH	
	Further information	:	Central Nervous System impairment Hematologic effects Upper Respiratory Tract irritation Eye irritation (): Adopted values or notations enclosed are those for w hich changes are proposed in the NIC See Notice of Intended Changes (NIC) BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section) A4: Not classifiable as a human carcinogen			
		STEL	750 ppm	2013-03-01	ACGIH	
	Further information	:	Central Nervous System impairment Hematologic effects Upper Respiratory Tract irritation Eye irritation (): Adopted values or notations enclosed are those for w hich changes are proposed in the NIC See Notice of Intended Changes (NIC)			

			BEI: Substances for which there is a Biological Exposure Index or Indices (see BEI® section) A4: Not classifiable as a human carcinogen			
		TWA	250 ppm 590 mg/m3	2013-10-08	NIOSH REL	
		TWA	1,000 ppm 2,400 mg/m3	1997-08-04	OSHA Z-1	
	Further information	:	(b): The value in mg/m3 is approximate.			
		TWA	750 ppm 1,800 mg/m3	1989-01-19	OSHA P0	
		STEL	1,000 ppm 2,400 mg/m3	1989-01-19	OSHA P0	
	Further information	:	h: The acetone STEL does not apply to the cellulose acetate fiber industry. It is in effect for all other sectors.			

Engineering measures
Explosion proof ventilation recommended.
Effective exhaust ventilation system

Personal protective equipment

Eye/face protection	:	Tightly fitting safety goggles
Hand protection	:	Glove material: butyl-rubber
	:	Glove material: Neoprene
Skin and body protection	:	Protective suit
Respiratory protection	:	Filter A
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

Environmental exposure controls

General advice	:	Prevent product from entering drains.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

Form	:	liquid
Color	:	clear colorless
Odor	:	faint
Odor Threshold	:	No data available

Safety data

pH	:	Weakly acidic
Melting point	:	< -20 °C
Boiling point/boiling range	:	Decomposes below the boiling point.
Flash point	:	Above the SADT value

Evaporation rate	:	No data available
Flammability (solid, gas)	:	
Lower explosion limit	:	No data available
Upper explosion limit	:	No data available
Vapor pressure	:	not determined
Relative vapor density	:	No data available
Relative density	:	0.956 at 20 °C
Bulk density	:	Not applicable
Water solubility	:	at 20 °C immiscible
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	log Pow: > 6.5
Autoignition temperature	:	Test method not applicable
Decomposition temperature	:	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 SADT. Contact with incompatible substances can cause decomposition below the SADT.
Self-Accelerating decomposition temperature (SADT)	:	35 °C
Viscosity, dynamic	:	80 mPa.s at 20 °C
Viscosity, kinematic	:	83.68 mm2/s at 20 °C
Explosive properties	:	Not explosive
Oxidizing properties	:	Not classified as oxidizing.
Active Oxygen Content	:	6.7 %
Organic peroxides	:	> 90 %

This material safety datasheet only contains information relating to safety and does not replace any product information or product specification.

10. STABILITY AND REACTIVITY

Conditions to avoid	:	Confinement must be avoided. Heat, flames and sparks.

For safety, store below:
15 °C
(59 °F)

Materials to avoid	:	Contact with incompatible materials will result in hazardous decomposition. For queries regarding the suitability of other materials please contact the supplier. Do not mix with peroxide accelerators, unless under controlled processing. Use only stainless steel 316, PP, polyethylene or glass-lined equipment. Acids and bases Iron Copper Reducing agents Heavy metals Rust
Hazardous decomposition products	:	2-Ethylhexanoic acid Heptane Acetone Carbon oxides 2,5-Dihydroxy-2,5-dimethylhexane Isopentanol
Thermal decomposition	:	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 SADT. Contact with incompatible substances can cause decomposition below the SADT.
Reactivity	:	Stable under normal conditions.
Chemical stability	:	Stable under recommended storage conditions.
Hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Self-Accelerating decomposition temperature (SADT)	:	35 °C (95 °F)

11. TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION:

Toxicology Assessment

Further information : No further data available.

Carcinogenicity:

IARC : No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA	:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	:	No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	:	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

TOXICOLOGY DATA FOR THE INGREDIENTS:

Test result

Component: 2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane

Acute oral toxicity	:	LD50: 12,918 mg/kg Species: Rat
Acute inhalation toxicity	:	LC50 (Rat): > 800 mg/l Test atmosphere: vapor
Skin irritation	:	Species: Rabbit Result: No skin irritation
Eye irritation	:	Species: Rabbit Result: No eye irritation
Sensitization	:	Maximization Test (GPMT) Species: Guinea pig Classification: Does not cause skin sensitization.
Repeated dose toxicity	:	Species: Rat Application Route: Oral Exposure time: 54 d () NOEL: 1,000 mg/kg
Germ cell mutagenicity		
Genotoxicity in vitro	:	in vitro test Result: No evidence of genotoxic effects in vitro.
Genotoxicity in vivo	:	Result: No evidence of genotoxic effects in vivo.
Reproductive toxicity/Fertility	:	Dose: 0, 30, 300, 1000 milligram per kilogram General Toxicity Parent: NOAEL (No observed adverse effect level): 30 mg/kg body weight/day Fertility: No observed adverse effect level Parent: 1,000 mg/kg body weight/day Species: Rat, females Strain: wistar Application Route: Oral Dose: 0, 30, 300, 1000 milligram per kilogram General Toxicity Parent: NOAEL (No observed adverse effect level): 1,000 mg/kg body weight/day Fertility: No observed adverse effect level Parent: 1,000 mg/kg body weight/day

Method: OECD Test Guideline 422
GLP: yes

Target Organ Systemic Toxicant - Repeated exposure	:	The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Aspiration toxicity	:	No aspiration toxicity classification

12. ECOLOGICAL INFORMATION

PRODUCT INFORMATION:

Ecotoxicology Assessment

Additional ecological information	:	None known.

Further information on ecology

Hazardous to the ozone layer

Regulation	:	40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances
Remarks	:	This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

INGREDIENTS:

Test result

Component: 2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane

Ecotoxicity effects

Toxicity to daphnia and other aquatic invertebrates	:	EC50: > 0.802 mg/l Exposure time: 48 h Species: Daphnia magna (Water flea) No toxicity at the limit of solubility.
Toxicity to algae	:	ErC50: > 100 mg/l Exposure time: 72 h Species: Pseudokirchneriella subcapitata (green algae) Test Type: Growth inhibition Method: OECD Test Guideline 201
Toxicity to bacteria	:	EC50: > 1,000 mg/l Exposure time: 3 h Species: activated sludge Test Type: Respiration inhibition Method: Domestic OECD Guideline 209

Elimination information (persistence and degradability)

Bioaccumulation	:	Bioaccumulation is not expected.

Biodegradability	:	Result: Readily biodegradable. Method: CO2 Evolution Test

13. DISPOSAL CONSIDERATIONS

Product	:	Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. Hazardous waste Dispose of contents/container in accordance with local regulation.
Contaminated packaging	:	Empty remaining contents. Dispose of as unused product. Do not burn, or use a cutting torch on, the empty drum. Due to the high risk of contamination recycling/recovery is not recommended. Follow all warnings even after the container is emptied.

14. TRANSPORT INFORMATION

International Regulation

IATA-DGR

UN/ID No.	:	UN 3113
Class	:	5.2 Not permitted for transport

IMDG-Code

UN number	:	UN 3113
Proper shipping name	:	ORGANIC PEROXIDE TYPE C, LIQUID, TEMPERATURE CONTROLLED (2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane)
Class	:	5.2
Packing group	:	Not Assigned
Labels	:	5.2
EmS Code	:	F-F, S-R
Marine pollutant	:	no

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

Further information for transport

Control temperature	:	20 °C (68 °F)
Emergency temperature	:	25 °C (77 °F)

Domestic regulation

49 CFR

UN/ID/NA number	:	UN 3113
Proper shipping name	:	Organic peroxide type C, liquid, temperature controlled
	:	(2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane, 95%)
Class	:	5.2
Packing group	:	II

Labels	:	5.2
ERG Code	:	148
Marine pollutant	:	no
Reportable Quantity	:	This product does not contain an environmentally hazardous substance per 49 CFR 172.101, Appendix A.

15. REGULATORY INFORMATION

Notification status

CH INV	:	YES. On the inventory, or in compliance with the inventory
TSCA	:	YES. All chemical substances in this product are either listed on the TSCA Inventory or in compliance with a TSCA Inventory exemption.
DSL	:	YES. All components of this product are on the Canadian DSL.
AICS	:	NO. Not in compliance with the inventory
NZIoC	:	NO. Not in compliance with the inventory
ENCS	:	YES. On the inventory, or in compliance with the inventory
ISHL	:	NO. Not in compliance with the inventory
KECI	:	NO. Not in compliance with the inventory
PICCS	:	YES. On the inventory, or in compliance with the inventory
IECSC	:	YES. On the inventory, or in compliance with the inventory

For explanation of abbreviations, see section 16.

TSCA list	:	Not relevant
OSHA Hazards	:	Organic Peroxide

EPCRA - Emergency Planning and Community Right-to-Know

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 311/312 Hazards	:	Reactivity Hazard
SARA 302	:	No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313	:	This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

This product does not contain any chemicals subject to disclosure and listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

US State Regulations

Pennsylvania Right To Know

2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane	13052-09-0	90 - 100 %

New Jersey Right To Know

2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane	13052-09-0	90 - 100 %

California Prop. 65

This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

16. OTHER INFORMATION

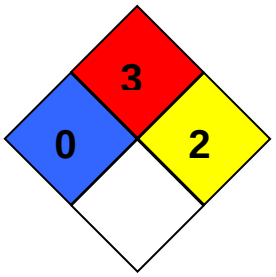
Full text of H-Statements

H242 : Heating may cause a fire.

Further information

HMIS Classification : Health Hazard: 0
Flammability: 2
Physical hazards: 3

NFPA Classification : Health Hazard: 0
Fire Hazard: 3
Reactivity Hazard: 2



Notification status explanation

REACH	1907/2006 (EU)
CH INV	Switzerland. New notified substances and declared preparations
TSCA	United States TSCA Inventory
DSL	Canadian Domestic Substances List (DSL)
AICS	Australia Inventory of Chemical Substances (AICS)
NZIoC	New Zealand. Inventory of Chemical Substances
ENCS	Japan. ENCS - Existing and New Chemical Substances Inventory
ISHL	Japan. ISHL - Inventory of Chemical Substances
KECI	Korea. Korean Existing Chemicals Inventory (KECI)
PICCS	Philippines Inventory of Chemicals and Chemical Substances (PICCS)
IECSC	China. Inventory of Existing Chemical Substances in China (IECSC)

Further information

Revision Date	04/26/2015

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. The user must determine the appropriate measures that need to be implemented for the use and handling of this product in the c ontext of the user's operations and use of this product. 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. No warranty is made as to the product's merchantability or fitness for any particular purpose, or that any suggested use will not infringe any patent. User must determine for himself, by preliminary tests or otherwise, the suitability of this product for his purposes, including mixing with other products. Nothing contained herein shall be construed as granting or extending any license under any patent.

The information provided in this Material 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.