SAFETY DATA SHEET

TRIGONOX 141

Version	Revision Date:	BR / EN	Date of last issue: 2018/05/07
2.2	2023/03/31		Date of first issue: 2015/01/12

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : TRIGONOX 141

:

Manufacturer or supplier's details

Company : Nouryon Functional Chemicals B.V.
Haaksbergweg 88
NL 1101 BZ Amsterdam
Netherlands

Address : Haaksbergweg 88
Amsterdam 1101 BZ

Telephone : +31889840367

Emergency telephone number : 24 hours:+31 57 06 79211, US-CHEMTREC:1-800-424-9300, CA-CANUTEC:1-613-996-6666, JP: +81 (836) 74 8810, CN: 化学事故应急咨询电话：+86 532 8388 9090

Recommended use of the chemical and restrictions on use

Recommended use : Polymerization initiator

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with ABNT NBR 14725 Standard

Organic peroxides : Type C

GHS label elements in accordance with ABNT NBR 14725 Standard

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.
P234 Keep only in original container.

P235 Keep cool.
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:

P411 Store at temperatures not exceeding 20°C/ 68°F.

Other hazards which do not result in classification

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture	:	Substance
Substance name	:	Di-tert-butyl 1,1,4,4-tetramethyltetramethylene diperoxide
CAS-No.	:	13052-09-0
Synonyms	:	Di-tert-butyl 1,1,4,4-tetramethyltetramethylene diperoxide

Components

Chemical name	CAS-No.	Classification	Concentration (% w/w)
2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane	13052-09-0	Organic peroxides, Type C	90 -100

SECTION 4. FIRST AID MEASURES

General advice	:	Move out of dangerous area. Consult a physician. Show this safety data sheet to the doctor in attendance.
If inhaled	:	If breathed in, move person into fresh air.
In case of skin contact	:	Take off contaminated clothing and shoes immediately. Rinse immediately with plenty of water.
In case of 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.
If swallowed	:	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.

Most important symptoms and effects, both acute and delayed	:	The symptoms and effects are as expected from the hazards as shown in section 2. No specific product related symptoms are known.
Notes to physician	:	Treat symptomatically.

SECTION 5. FIREFIGHTING 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 firefighting	:	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. Hazardous decomposition products formed under fire conditions.
Hazardous combustion products	:	Fire will produce smoke containing hazardous combustion products (see section 10).
Specific extinguishing methods	:	Use water spray to cool unopened containers.
Special protective equipment for firefighters	:	In the event of fire, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	:	Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. Evacuate personnel to safe areas. Only qualified personnel equipped with suitable protective equipment may intervene. Prevent unauthorised persons entering the zone.
Environmental precautions	:	Prevent product from entering drains.

Methods and materials for containment and cleaning up	:	Soak up with inert absorbent material and dispose of as hazardous waste. Use only inert inorganic material such as vermiculite or perlite as absorbent. Keep mixture of absorbent material and spilled product wetted with water. Confinement must be avoided. Never return spills in original containers for re-use.

SECTION 7. HANDLING AND STORAGE

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.
Advice on safe handling	:	For personal protection see section 8. Do not smoke. Open drum carefully as content may be under pressure.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
Conditions for safe storage	:	No smoking. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards. Keep only in original container. Store away from other materials.
Further information on storage stability	:	If product freezes or separates, contact the manufacturer. Maximum storage temperature is for quality only. No decomposition if stored and applied as directed.
Minimum storage temperature:	:	Avoid temperatures below: -20 °C
Maximum storage temperature:	:	15 °C

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Contains no substances with occupational exposure limit values.

Occupational exposure limits of decomposition products

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
Heptane	142-82-5	TWA	400 ppm	ACGIH
		STEL	500 ppm	ACGIH
Acetone	67-64-1	LT	780 ppm 1.870 mg/m3	BR OEL
	Further information: Degree of harmfulness: minimum			
		TWA	250 ppm	ACGIH
		STEL	500 ppm	ACGIH
		TWA	250 ppm	ACGIH
		STEL	500 ppm	ACGIH
Carbon dioxide	124-38-9	LT	3.900 ppm 7.020 mg/m3	BR OEL
	Further information: Degree of harmfulness: minimum			
		TWA	5.000 ppm	ACGIH
		STEL	30.000 ppm	ACGIH

Engineering measures : Explosion proof ventilation recommended.
Effective exhaust ventilation system

Personal protective equipment

Respiratory protection : Filter A

Hand protection
Material : Neoprene

Material : Nitrile rubber

Eye protection : Tightly fitting safety goggles

Skin and body protection : Protective suit

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Colour	:	clear, colourless
Odour	:	Faint.
Odour Threshold	:	No data available
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 (liquids)	:	Decomposition products may be flammable.
Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Vapour pressure	:	not determined
Relative vapour density	:	No data available
Relative density	:	0,956 (20 °C)
Bulk density	:	Not applicable
Solubility(ies)		
Water solubility	:	immiscible (20 °C)
Solubility in other solvents	:	No data available
Partition coefficient: n-octanol/water	:	log Pow: > 6,5
Auto-ignition 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		
Viscosity, dynamic	:	80 mPa.s (20 °C)
Viscosity, kinematic	:	83,68 mm2/s (20 °C)
Explosive properties	:	Not explosive
Oxidizing properties	:	Not classified as oxidising.
Active Oxygen Content	:	6,7 %
Organic peroxides	:	> 90 %

SECTION 10. STABILITY AND REACTIVITY

Reactivity	:	Stable under normal conditions.
Chemical stability	:	Stable under recommended storage conditions.
Possibility of hazardous reactions	:	No dangerous reaction known under conditions of normal use.
Conditions to avoid	:	Confinement must be avoided. Heat, flames and sparks.
Incompatible materials	:	Contact with the following incompatible materials will result in hazardous decomposition: Acids and bases Iron Copper Reducing agents Heavy metals Rust Do not mix with peroxide accelerators, unless under controlled processing. Use only stainless steel 316, PP, polyethylene or glass-lined

equipment.
For queries regarding the suitability of other materials please contact the supplier.

Hazardous decomposition products	:	No decomposition if stored and applied as directed.
Hazardous decomposition products	:	Heptane Acetone 2,5-Dihydroxy-2,5-dimethylhexane Methyl propyl ketone Carbon dioxide Heptene 2,5-Bis(1-ethylpentoxy)-2,5-dimethylhexane
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.
Self-Accelerating decomposition temperature (SADT)	:	35 °C

SECTION 11. TOXICOLOGICAL INFORMATION

Acute toxicity

Not classified based on available information.

Components:

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

Acute oral toxicity	:	LD50 (Rat): 12.918 mg/kg
Acute inhalation toxicity	:	LC50 (Rat): > 800 mg/l Test atmosphere: vapour
Acute dermal toxicity	:	LD50 (Rabbit): > 8.000 mg/kg

Skin corrosion/irritation

Not classified based on available information.

Components:

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

Species	:	Rabbit

Result : No skin irritation

Serious eye damage/eye irritation

Not classified based on available information.

Components:

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

Species : Rabbit
Result : No eye irritation

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Components:

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

Test Type : Maximisation Test
Species : Guinea pig
Assessment : Does not cause skin sensitisation.

Germ cell mutagenicity

Not classified based on available information.

Components:

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

Genotoxicity in vitro : Test Type: in vitro assay
Result: No evidence of genotoxic effects in vitro.

Genotoxicity in vivo : Result: No evidence of genotoxic effects in vivo.

Carcinogenicity

Not classified based on available information.

Components:

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

Remarks : No data available

Reproductive toxicity

Not classified based on available information.

Components:

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

Effects on fertility : Dose: 0 30, 300, 1000 milligram per kilogram
General Toxicity - Parent: NOAEL: 30 mg/kg bw/day
Fertility: NOAEL Parent: 1.000 mg/kg bw/day

Species: Rat, females
Strain: wistar
Application Route: Oral
Dose: 0 30, 300, 1000 milligram per kilogram
General Toxicity - Parent: NOAEL: 1.000 mg/kg bw/day
Fertility: NOAEL Parent: 1.000 mg/kg bw/day
Method: OECD Test Guideline 422
GLP: yes

STOT - single exposure

Not classified based on available information.

Components:

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

Remarks : Not classified due to data which are conclusive although insufficient for classification.

STOT - repeated exposure

Not classified based on available information.

Components:

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

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Repeated dose toxicity

Components:

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

Species : Rat
NOAEL : 1.000 mg/kg
Application Route : Oral
Exposure time : 54 d

Aspiration toxicity

Not classified based on available information.

Components:

2,5-Dimethyl-2,5-di(2-ethylhexanoylperoxy)hexane:
No aspiration toxicity classification

Further information

Product:

Remarks : No further data available.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

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

Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): > 0,802 mg/l Exposure time: 48 h Remarks: No toxicity at the limit of solubility
Toxicity to algae/aquatic plants	:	ErC50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l Exposure time: 72 h Test Type: Growth inhibition Method: OECD Test Guideline 201
Toxicity to microorganisms	:	EC50 (activated sludge): > 1.000 mg/l Exposure time: 3 h Test Type: Respiration inhibition Method: Domestic OECD Guideline 209

Persistence and degradability

Components:

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

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

Bioaccumulative potential

Components:

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

Bioaccumulation	:	Remarks: No bioaccumulation is expected.

Partition coefficient: n-octanol/water	:	log Pow: > 6,5

Mobility in soil

No data available

Other adverse effects

Product:

Additional ecological information	:	None known.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues	:	Do not dispose of waste into sewer. Do not contaminate ponds, waterways or ditches with chemical or used container. 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.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG

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 by regulation
Labels	:	5.2

IATA-DGR

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 by regulation
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.

National Regulations

ANTT

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 by regulation
Labels	:	5.2
Hazard Identification Number	:	539

Special precautions for user

Further information for transport

Control temperature	:	20 °C
Emergency temperature	:	25 °C

The transport classification(s) provided herein are for informational purposes only. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture

National List of Carcinogenic Agents for Humans - (LINACH)	:	Not applicable
Brazil. List of chemicals controlled by the Federal Police	:	Not applicable

The components of this product are reported in the following inventories:

TCSI	:	On the inventory, or in compliance with the inventory

TSCA	:	All substances listed as active on the TSCA inventory
AIIC	:	Not in compliance with the inventory
DSL	:	All components of this product are on the Canadian DSL
ENCS	:	On the inventory, or in compliance with the inventory
ISHL	:	On the inventory, or in compliance with the inventory
KECI	:	On the inventory, or in compliance with the inventory
PICCS	:	On the inventory, or in compliance with the inventory
IECSC	:	On the inventory, or in compliance with the inventory
NZIoC	:	Not in compliance with the inventory
TECI	:	Not in compliance with the inventory

SECTION 16. OTHER INFORMATION

Revision Date	:	2023/03/31
Date format	:	yyyy/mm/dd

Full text of other abbreviations

ACGIH	:	USA. ACGIH Threshold Limit Values (TLV)
BR OEL	:	Brazil. NR 15 - Unhealthy activities and operations
ACGIH / TWA	:	8-hour, time-weighted average
ACGIH / STEL	:	Short-term exposure limit
BR OEL / LT	:	Up to 48 hours /week

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing

Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

The information provided in this 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.

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