

SAFETY DATA SHEET

according to GB/T 16483 and GB/T 17519

TRIGONOX 101

Version 2 Revision Date: 2020/10/05 Print Date: 2023/03/14 CN / EN

Date of first issue: 10.04.2015

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

Product Information

Trade name : TRIGONOX 101

Use of the : Specific use(s): Polymerization initiator

Substance/Mixture Cross-linking agent

Company : Nouryon Functional Chemicals B.V.

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NL 1101 BZ Amsterdam

Netherlands

Telephone : +31889840367

Telefax

E-mail address : polymer.emeia@nouryon.com

Emergency telephone : 24 hours:+31 57 06 79211, US-CHEMTREC:1-800-424-9300,

number 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

2. HAZARDS IDENTIFICATION

Emergency Overview

Appearance				
Form	liquid			
Colour	light yellow, clear			
Odour	characteristic			
GB 6944/12268				
UN number	UN 3103			
Proper shipping name ORGANIC PEROXIDE TYPE C, LIQUID				
	(2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane)			
Class	5.2			
Packing group	Not Assigned			
Hazard Summary				
General advice	Move out of dangerous area.			
	Consult a physician.			
	Show this safety data sheet to the doctor in attendance.			
Physical and chemical	Combustible liquid.			
hazards	Heating may cause a fire.			

Health hazards	
Inhalation	Inhalation of aerosols may cause irritation to mucous
	membranes.
	Thermal decomposition can lead to release of irritating gases and
	vapours.
Skin	May be harmful in contact with skin.
	Causes skin irritation.
Eyes	May cause eye irritation.
Ingestion	May cause irritation of the mucous membranes.
Acute effects	Causes skin irritation.
Environmental hazards	None known.

GHS Classification

Flammable liquids, Category 4
Organic peroxides, Type C
Acute toxicity, Category 5, Dermal
Skin corrosion/irritation, Category 2

GHS label elements

Hazard pictograms





Signal word : Danger

Hazard statements : H227 Combustible liquid.

H242 Heating may cause a fire.

H313 May be harmful in contact with skin.

H315 Causes skin irritation.

Precautionary statements : Prevention:

P210 Keep away from heat/ sparks/ open flames/ hot surfaces.

No smoking.

P220 Keep/ Store away from clothing/ combustible materials.

P234 Keep only in original container.

P264 Wash skin thoroughly after handling.

P280 Wear protective gloves/ eye protection/ face protection.

Response:

P302 + P352 IF ON SKIN: Wash with plenty of water. P312 Call a POISON CENTER/ doctor if you feel unwell. P332 + P313 If skin irritation occurs: Get medical advice/

attention.

P362 + P364 Take off contaminated clothing and wash it before

reuse.

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.

P420 Store away from other materials.

Disposal:

P501 Dispose of contents/ container to an approved waste

disposal plant.

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Physical and chemical hazards

Combustible liquid. Heating may cause a fire.

Health hazards

Inhalation : Inhalation of aerosols may cause irritation to mucous

membranes.

Thermal decomposition can lead to release of irritating gases

and vapours.

Skin : May be harmful in contact with skin.

Causes skin irritation.

Eyes : May cause eye irritation.

Ingestion : May cause irritation of the mucous membranes.

Acute effects : Causes skin irritation.

Further information : No further data available.

Test result

Acute inhalation toxicity : Assessment: The substance or mixture has no acute

inhalation toxicity

Acute dermal toxicity

Acute toxicity estimate: 2,640 mg/kg

Method: Calculation method

Environmental hazards

None known.

Other hazards

No further data available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Common Name : Organic peroxide Chemical nature : Substance

Hazardous substance

Chemical name	CAS-No.	Classification	Concentration [%]
2,5-Dimethyl-2,5-di(tert- butylperoxy)hexane	78-63-7	Flam. Liq. 4; H227 Org. Perox. C; H242 Acute Tox. 5; H313 Skin Corr./Irrit. 2; H315	>= 92 - <= 100

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 safety data sheet to the doctor in attendance.

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

Consult a physician after significant exposure.

Skin contact : Take off contaminated clothing and shoes immediately.

Rinse immediately with plenty of water. If skin irritation persists, call a physician.

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.

Obtain medical attention.

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.

Risks : May be harmful in contact with skin.

Causes skin irritation.

Treatment : Treat symptomatically.

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 / 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

Water spray may be ineffective unless used by experienced

firefighters.

Do not allow run-off from fire fighting to enter drains or water

courses.

Hazardous decomposition products formed under fire

conditions.

Combustion products : Fire will produce smoke containing hazardous combustion

products (see section 10).

Special protective equipment

for firefighters

: In the event of fire, wear self-contained breathing apparatus.

Further information : Use water spray to cool unopened containers.

Collect contaminated fire extinguishing water separately. This

must not be discharged into drains.

Fire residues and contaminated fire extinguishing water must

be disposed of in accordance with local regulations.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal precautions

: Use personal protective equipment.

Ensure adequate ventilation. Remove all sources of ignition.

Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

Emergency measures on

accidental release

: 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 for cleaning up / Methods for containment

: Soak up with inert absorbent material and dispose of as

hazardous waste.

Keep mixture of absorbent material and spilled product wetted

with water.

Confinement must be avoided.

Use only inert inorganic material such as vermiculite or perlite

as absorbent.

Never return spills in original containers for re-use.

Reference to other sections : For disposal considerations see section 13.

For personal protection see section 8.

7. HANDLING AND STORAGE

Handling

Advice on safe handling : For personal protection see section 8.

Avoid contact with skin, eyes and clothing.

Smoking, eating and drinking should be prohibited in the

application area.

Open drum carefully as content may be under pressure.

Advice on protection against

fire and explosion

: Use explosion protected equipment.

Avoid formation of aerosol.

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. Take measures to prevent the build up of electrostatic charge.

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.

Electrical installations / working materials must comply with

the technological safety standards. Keep only in original container. Store away from other materials.

Minimum storage

: Avoid temperatures below:

temperature:

10 °C

Maximum storage

temperature:

: 40 °C

Other data : If product freezes or separates, contact the manufacturer.

Maximum storage temperature is for quality only.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

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
Acetone	67-64-1, 67-	PC-TWA	300 mg/m3	2019-08-27	CN OEL	

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64-1					
	PC- STEL	450 mg/m3	2019-08-27	CN OEL	

Appropriate engineering controls

Explosion proof ventilation recommended. Effective exhaust ventilation system

Personal protective equipment

Respiratory protection : In the case of vapour or aerosol formation use a respirator

with an approved filter.

Filter A

Hand protection : Neoprene

Nitrile rubber

Eye/face protection : Tightly fitting safety goggles

Skin and body protection : Protective suit

Hygiene measures : Handle in accordance with good industrial hygiene and safety

practice.

When using do not eat or drink. When using do not smoke.

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

Colour : light yellow

clear

Odour : characteristic

Odour Threshold : No data available

Safety data

pH : Not applicable

Melting point : 1 - 10 °C

Boiling point/boiling range : Decomposes below the boiling point.

Flash point : 68 °C

at 1,013 hPa

Evaporation rate : Not applicable

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Flammability (solid, gas) : Not applicable

Flammability (liquids) : Combustible liquid.

Decomposition products may be flammable.

Lower explosion limit : Not applicable

Upper explosion limit : Not applicable

Vapour pressure : < 0.01 hPa at 20 °C

Relative vapour density : No data available

Relative density : 0.872 at 20 °C

Water solubility : immiscible

Solubility in other solvents : organic solvent

soluble

Partition coefficient: n-

octanol/water

: log Pow: 7.34

at 20 °C

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)

: 80 °C

Viscosity, dynamic : 7.35 mPa.s at 20 °C

Viscosity, kinematic : 8.54 mm2/s at 20 °C

Explosive properties : Not explosive

Oxidizing properties : The substance or mixture is not classified as oxidizing.

Active Oxygen Content : 10.14 %

Organic peroxides : > 92 %

This 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.

Materials to avoid : 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

: tert-Butanol

tert-Amyl alcohol

Acetone Methane Ethane Carbon oxides

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)

: 80 °C

11. TOXICOLOGICAL INFORMATION

PRODUCT INFORMATION:

Hazard Summary

Acute toxicity : May be harmful in contact with skin.

Skin corrosion/irritation : Causes skin irritation.

Serious eye damage/eye

irritation

: Not classified based on available information.

Respiratory or skin : Respiratory sensitisation: Not classified based on available

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sensitisation information.

Skin sensitisation: Not classified based on available

information.

Germ cell mutagenicity : Not classified based on available information.

Carcinogenicity : Not classified based on available information.

Reproductive toxicity : Not classified based on available information.

STOT - single exposure : Not classified based on available information.

STOT - repeated exposure : Not classified based on available information.

Aspiration hazard : Not classified based on available information.

Potential Health Effects

Inhalation : Inhalation of aerosols may cause irritation to mucous

membranes.

Thermal decomposition can lead to release of irritating gases

and vapours.

Skin : May be harmful in contact with skin.

Causes skin irritation.

Eyes : May cause eye irritation.

Ingestion : May cause irritation of the mucous membranes.

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.

Toxicology Assessment

Acute effects : Causes skin irritation.

Further information : No further data available.

Test result

Acute inhalation toxicity : Assessment: The substance or mixture has no acute

inhalation toxicity

Acute dermal toxicity :

Acute toxicity estimate: 2,640 mg/kg

Method: Calculation method

TOXICOLOGY DATA FOR THE COMPONENTS:

Test result

Component: 2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane

Acute oral toxicity : LD50: > 2,000 mg/kg

Species: Rat

Method: OECD Test Guideline 401

LD50: > 32,000 mg/kg

Species: Rat

Method: OECD Test Guideline 401

Acute dermal toxicity : LD50: 2,800 - 5,400 mg/kg

Species: Rat

Method: OECD Test Guideline 402

Skin irritation : Species: Rabbit

Result: Severe skin irritation

Method: OECD Test Guideline 404

Exposure time: 4 h

Eye irritation : Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Sensitisation : Maximisation Test

Species: Guinea pig

Classification: Does not cause skin sensitisation.

Method: OECD Test Guideline 406

Repeated dose toxicity : Species: Rat, male and female

NOAEL: mg/kg bw/day, 150 Application Route: Oral Exposure time: 90 d

Method: OECD Test Guideline 408

GLP: yes

Species: Rat, male and female NOAEL: mg/kg bw/day, 200 Application Route: Oral

Exposure time: 28 d

Method: OECD Test Guideline 407

GLP: yes

Germ cell mutagenicity

Genotoxicity in vitro : Chromosome aberration test in vitro

mouse lymphoma cells

Result: negative

Method: OECD Test Guideline 476

Genotoxicity in vivo : In vivo micronucleus test

Species: Mouse

Method: OECD Test Guideline 474

Result: negative

Reproductive : Species: Rat

toxicity/Development/Teratog

enicity

Strain: Sprague-Dawley Application Route: Oral

General Toxicity Maternal: No observed adverse effect level:

300 mg/kg bw/day

Developmental Toxicity: No observed adverse effect level F1:

300 mg/kg bw/day

Method: OECD Test Guideline 414

GLP: yes

12. ECOLOGICAL INFORMATION

PRODUCT INFORMATION:

Ecotoxicology Assessment

Additional ecological

: None known.

information

COMPONENTS:

Ecotoxicology Assessment

Component: 2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane

Short-term (acute) aquatic

: This product has no known ecotoxicological effects.

hazard

Long-term (chronic) aquatic

hazard

: This product has no known ecotoxicological effects.

Test result

Component: 2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane

Ecotoxicity effects

Toxicity to fish : LC50: 4.5 mg/l

Exposure time: 96 h

Species: Oryzias latipes (Japanese medaka)

Test Type: semi-static test

Method: OECD Test Guideline 203 No toxicity at the limit of solubility

Toxicity to algae : EC50: $> 236 \mu g/l$

Exposure time: 72 h

Species: Pseudokirchneriella subcapitata (green algae)

Test Type: Growth inhibition Analytical monitoring: yes

Method: OECD Test Guideline 201 No toxicity at the limit of solubility

Toxicity to bacteria : NOEC: > 1,000 mg/l

Exposure time: 3 h

Species: activated sludge Test Type: Respiration inhibition

Method: OECD Test Guideline 209
No toxicity at the limit of solubility

Toxicity to daphnia and other

aquatic invertebrates

: NOEC: > 6.5 Exposure time: 21 d

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reproduction rate (Chronic toxicity)

Species: Daphnia magna (Water flea)

Test Type: semi-static test Analytical monitoring: yes

Method: OECD Test Guideline 211 No toxicity at the limit of solubility

Elimination information (persistence and degradability)

: Bioconcentration factor (BCF): 521 - 839 Bioaccumulation

Biodegradability : Test Type: Ready biodegradability

Inoculum: activated sludge, non-adapted

Concentration: 1 mg/l

Result: Not readily biodegradable.

Biodegradation: 0 % Exposure time: 28 d

Method: OECD Test Guideline 301D

13. DISPOSAL CONSIDERATIONS

Product 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.

14. TRANSPORT INFORMATION

International Regulations

IATA-DGR

UN/ID No. : UN 3103

Organic peroxide type C, liquid Proper shipping name

(2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane)

Class : 5.2 : HEAT Subsidiary risk

Packing group : Not Assigned Labels : 5.2 (HEAT) : 570

Packing instruction (cargo

aircraft)

: 570

Packing instruction (passenger aircraft)

Environmentally hazardous

: no

IMDG-Code

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UN number : UN 3103

Proper shipping name : ORGANIC PEROXIDE TYPE C, LIQUID

(2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane)

Class : 5.2

Packing group : Not Assigned

Labels : 5.2 EmS Code : F-J, 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

GB 6944/12268

UN number : UN 3103

Proper shipping name : ORGANIC PEROXIDE TYPE C, LIQUID

(2,5-Dimethyl-2,5-di(tert-butylperoxy)hexane)

Class : 5.2

Packing group : Not Assigned

Labels : 5.2 Environmentally hazardous : no

15. REGULATORY INFORMATION

Notification status

TCSI : YES. On the inventory, or in compliance with the inventory
TSCA : YES. All substances listed as active on the TSCA inventory
AICS : YES. On the inventory, or in compliance with the inventory
DSL : YES. All components of this product are on the Canadian DSL

ENCS : NO. Not in compliance with the inventory

ISHL : YES. On the inventory, or in compliance with the inventory KECI : YES. On the inventory, or 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 NZIOC : YES. On the inventory, or in compliance with the inventory

For explanation of abbreviation see section 16.

National regulatory information

Regulations on Safety Management of Hazardous Chemicals

Catalogue of Hazardous Chemicals : Listed

Identification of Major Hazard Installations for Hazardous Chemicals (GB 18218)

Category Threshold quantity

Organic peroxides 50 t

Further information : none

16. OTHER INFORMATION

Full text of H-Statements

H227 : Combustible liquid. H242 : Heating may cause a fire.

H313 : May be harmful in contact with skin.

H315 : Causes skin irritation.

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Full text of other abbreviations

CN OEL : Occupational exposure limits for hazardous agents in the

workplace - Chemical hazardous agents.

CN OEL / PC-TWA : Permissible concentration - time weighted average CN OEL / PC-STEL : Permissible concentration - short term exposure limit

AICS - Australian Inventory of Chemical Substances; 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; 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

Further information

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

This data sheet contains changes from the previous version in section(s): Hazards identification Composition/information on ingredients Toxicological information

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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