

SAFETY DATA SHEET

according to GB/T 16483 and GB/T 17519

TRIGONOX 145-E85

Version 3 Revision Date: 2021/12/17 Print Date: 2023/03/14 CN / EN

Date of first issue: 12.01.2015

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

Product Information

Trade name : TRIGONOX 145-E85

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

Substance/Mixture Cross-linking agent

Company : Nouryon Functional Chemicals B.V.

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8388 9090

2. HAZARDS IDENTIFICATION

number

Emergency Overview

Appearance	
Form	Clear liquid
Colour	colourless
Odour	Faint.
GB 6944/12268	
UN number	UN 3103
Proper shipping name	ORGANIC PEROXIDE TYPE C, LIQUID
	(2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3)
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	Not expected to be irritating.		
Skin	Not expected to be irritating.		
Eyes	Not expected to be irritating.		
Ingestion	Not expected to be irritating.		
Environmental hazards	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.		

GHS Classification

Flammable liquids, Category 4 Organic peroxides, Type C

Short-term (acute) aquatic hazard, Category 2 Long-term (chronic) aquatic hazard, Category 2

GHS label elements

Hazard pictograms





Signal word : Danger

Hazard statements : H227 Combustible liquid.

H242 Heating may cause a fire.

H411 Toxic to aquatic life with long lasting effects.

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. P273 Avoid release to the environment.

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.

P391 Collect spillage.

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.

Physical and chemical hazards

Combustible liquid.

Heating may cause a fire.

Health hazards

Inhalation : Not expected to be irritating.

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Skin : Not expected to be irritating.

Eyes : Not expected to be irritating.

Ingestion : Not expected to be irritating.

Further information : No further data available.

Environmental hazards

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Other hazards

No further data available.

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3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature : Mixture

Hazardous substance

Chemical name	CAS-No.	Classification	Concentration [%]
2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3	1068-27-5	Flam. Liq. 3; H226 Org. Perox. B; H241 Aquatic Acute 2; H401 Aquatic Chronic 2; H411	>= 83 - <= 86

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.

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. 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

: CAUTION: reignition may occur.

Supports combustion.

arising from the chemical Do not use a solid water stream as it may scatter and spread

fire.

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).

Carbon oxides

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 : 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.

Discharge into the environment must be avoided.

Methods for cleaning up / Methods for containment

: 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.

Reference to other sections

: For disposal considerations see section 13.

For personal protection see section 8.

7. HANDLING AND STORAGE

Handling

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

Do not smoke.

Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national

regulations.

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

temperature:

: Avoid temperatures below:

10 °C

Maximum storage

temperature:

: 30 °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

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
tert-Butanol	75-65-0	TWA	100 ppm	ACGIH
		TWA	100 ppm	ACGIH
Acetone	67-64-1	PC-TWA	300 mg/m3	CN OEL
		PC-STEL	450 mg/m3	CN OEL
		TWA	250 ppm	ACGIH
		STEL	500 ppm	ACGIH

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TWA	250 ppm	ACGIH
STEL	500 ppm	ACGIH

Engineering measures : Explosion proof ventilation recommended.

Effective exhaust ventilation system

Personal protective equipment

Respiratory protection : Filter A

Eye/face protection : Tightly fitting safety goggles

Skin and body protection : Protective suit

Hand protection

Material : Neoprene

Material : Nitrile rubber

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.

Discharge into the environment must be avoided.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Clear liquid

Colour : colourless

Odour : Faint.

Odour Threshold : No data available

pH : Not applicable

Melting point : $<= -30 \, ^{\circ}\text{C}$

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

Flash point : 78 °C

Method: closed cup

Evaporation rate : No data available

Flammability (liquids) : Decomposition products may be flammable.

Upper explosion limit / Upper

flammability limit

No data available

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Lower explosion limit / Lower

flammability limit

No data available

Vapour pressure : < 1 hPa (20 °C)

Relative vapour density : No data available

Relative density : 0.88 (20 °C)

Bulk density : Not applicable

Solubility(ies)

Water solubility : immiscible (20 °C)

Solubility in other solvents : Soluble in most organic solvents.

Partition coefficient: n-

octanol/water

No data available

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

Viscosity, dynamic : No data available

Viscosity, kinematic : No data available

Explosive properties : Not explosive

Oxidizing properties : Not classified as oxidising.

Active Oxygen Content : 9.5 %

Organic peroxides : 85 %

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 Acetone Methane

2,5-Dimethyl-3-hexyne-2,5-diol

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 : Not classified based on available information.

Skin corrosion/irritation : Not classified based on available information.

Serious eye damage/eye

irritation

Not classified based on available information.

Respiratory or skin

sensitisation

Respiratory sensitisation: Not classified based on available

information.

Skin sensitisation: Not classified based on available

information.

Germ cell mutagenicity : Not classified based on available information.

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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 : 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.

Toxicology Assessment

Further information : No further data available.

TOXICOLOGY DATA FOR THE COMPONENTS:

Test result

Component: 2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3

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

Species: Rat

Method: OECD Test Guideline 423

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

Species: Rat

Method: OECD Test Guideline 402

Skin irritation : Species: Rabbit

Result: No skin irritation

Method: OECD Test Guideline 404

Eye irritation : Species: Rabbit

Result: No eye irritation

Method: OECD Test Guideline 405

Sensitisation : Maximisation Test

Species: Guinea pig

Result: Does not cause skin sensitisation.

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Method: OECD Test Guideline 406

Repeated dose toxicity : Species: Rat, male and female

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

Method: OECD Test Guideline 408

GLP: yes

Germ cell mutagenicity

Genotoxicity in vitro : Ames test

Salmonella typhimurium

Result: negative

Method: OECD Test Guideline 471

In vitro mammalian cell gene mutation test

Chinese hamster ovary cells

Result: negative

Method: OECD Test Guideline 476

Chromosome aberration test in vitro

Human lymphocytes Result: negative

Method: OECD Test Guideline 473

Reproductive

toxicity/Development/Teratog

enicity

Species: Rat

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:

300 mg/kg bw/day

Method: OECD Test Guideline 414

GLP: yes

Read-across from supporting substance (structural analogue

or surrogate).

Aspiration toxicity : No aspiration toxicity classification

12. ECOLOGICAL INFORMATION

PRODUCT INFORMATION:

Ecotoxicology Assessment

Additional ecological

information

: An environmental hazard cannot be excluded in the event of

unprofessional handling or disposal.

COMPONENTS:

Test result

Component: 2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3

Ecotoxicity effects

Toxicity to fish : NOEC: 100 mg/l

Exposure time: 96 h

Species: Danio rerio (zebra fish) Test Type: semi-static test

Method: OECD Test Guideline 203

LC50: > 100 mg/l Exposure time: 96 h

Species: Danio rerio (zebra fish) Test Type: semi-static test

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

Toxicity to daphnia and other

aquatic invertebrates

EC50: > 5.31 mg/l Exposure time: 48 h

Species: Daphnia magna (Water flea)

Test Type: static test

Method: OECD Test Guideline 202

Not classified due to data which are conclusive although

insufficient for classification.

Toxicity to algae : NOEC: 1.88 mg/l

Exposure time: 72 h

Species: Pseudokirchneriella subcapitata (green algae)

Test Type: static test

Method: OECD Test Guideline 201

Estimated value

EC50: 6.17 mg/l Exposure time: 72 h

Species: Pseudokirchneriella subcapitata (green algae)

Test Type: static test

Method: OECD Test Guideline 201

Estimated value

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

Exposure time: 3 h
Species: activated sludge
Test Type: Respiration inhibition
Method: OECD Test Guideline 209

EC50: > 1,000 mg/l Exposure time: 3 h Species: activated sludge Test Type: Respiration inhibition Method: OECD Test Guideline 209

Elimination information (persistence and degradability)

Biodegradability : Test Type: Ready biodegradability

Inoculum: activated sludge, non-adapted

Result: Not readily biodegradable.

Biodegradation: 0 % Exposure time: 140 d

Method: OECD Test Guideline 301D

GLP: yes

13. DISPOSAL CONSIDERATIONS

Product : The product should not be allowed to enter drains, water

courses or the soil.

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

Proper shipping name : Organic peroxide type C, liquid

(2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3)

Class : 5.2 Subsidiary risk : HEAT

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

Packing instruction (cargo

aircraft)

Packing instruction : 570

(passenger aircraft)

Environmentally hazardous : yes

IMDG-Code

UN number : UN 3103

: ORGANIC PEROXIDE TYPE C. LIQUID Proper shipping name

(2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3)

: 5.2 Class

Packing group : Not Assigned

Labels 5.2 EmS Code : F-J, S-R Marine pollutant : yes

(2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3)

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

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Proper shipping name : ORGANIC PEROXIDE TYPE C, LIQUID

(2,5-Dimethyl-2,5-di(tert-butylperoxy)hexyne-3)

Class : 5.2

Packing group : Not Assigned

Labels : 5.2 Environmentally hazardous : yes

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 AIIC YES. On the inventory, or in compliance with the inventory YES. All components of this product are on the Canadian DSL DSL YES. On the inventory, or in compliance with the inventory **ENCS** 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 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 TECI

For explanation of abbreviation see section 16.

National regulatory information

Hazardous Chemicals for Priority Management under : Not applicable

SAWS

China Severely Restricted Toxic Chemicals for Import : Not applicable

and Export

Catalogue of Hazardous Chemicals : 2,5-Dimethyl-2,5-di(tert-

butylperoxy)hexyne-3

Listed

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

H226 : Flammable liquid and vapour.

H241 : Heating may cause a fire or explosion.

H401 : Toxic to aquatic life.

H411 : Toxic to aquatic life with long lasting effects.

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)

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CN OEL : Occupational exposure limits for hazardous agents in the

workplace - Chemical hazardous agents.

ACGIH / TWA : 8-hour, time-weighted average ACGIH / STEL : Short-term exposure limit

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

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

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
Handling and storage
Toxicological information
Ecological information
Transport 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

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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.