

SAFETY DATA SHEET

According to REACH Regulation (EC) No 1907/2006, as amended by
UK REACH Regulations SI 2019/758



CH-80-AL

Version	Revision Date:	SDS Number:	Date of last issue: 30.07.2024
3.1	21.08.2024	600000000244	Date of first issue: 14.12.2022

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name : CH-80-AL

REACH Registration Number : 01-2119967008-33-0000

Substance name : Cyclohexylidenebis[tert-butyl] peroxide

EC-No. : 221-111-2

1.2 Relevant identified uses of the substance or mixture and uses advised against

Use of the Sub-
stance/Mixture : polymerisation initiators

1.3 Details of the supplier of the safety data sheet

Company : United Initiators GmbH
Dr.-Gustav-Adolph-Str. 3
82049 Pullach

Telephone : +49 / 89 / 74422 – 0

E-mail address of person
responsible for the SDS : contact@united-in.com

1.4 Emergency telephone number

+44 1235 239670

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

**Classification (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK
SI 2019/720, and UK SI 2020/1567)**

Flammable liquids, Category 3	H226: Flammable liquid and vapour.
Organic peroxides, Type C	H242: Heating may cause a fire.
Aspiration hazard, Category 1	H304: May be fatal if swallowed and enters air-ways.
Long-term (chronic) aquatic hazard, Category 1	H410: Very toxic to aquatic life with long lasting effects.

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2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008) as amended by GB-CLP Regulation, UK SI 2019/720, and UK SI 2020/1567)

Hazard pictograms : 

Signal word : Danger

Hazard statements : H226 Flammable liquid and vapour.
H242 Heating may cause a fire.
H304 May be fatal if swallowed and enters airways.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P234 Keep only in original packaging.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER/ doctor.
P331 Do NOT induce vomiting.
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.
P391 Collect spillage.

Additional Labelling

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

Substance name : Cyclohexylidenebis[tert-butyl] peroxide

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Chemical nature : Organic Peroxide

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)
Cyclohexylidenebis[tert-butyl] peroxide	3006-86-8 221-111-2	$\geq 75 - < 80$
Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated	93685-81-5 236-757-0	$\geq 20 - < 25$
tert-butyl hydroperoxide	75-91-2 200-915-7	$\geq 0.25 - < 0.75$

SECTION 4: First aid measures

4.1 Description of first aid measures

- General advice : Take off contaminated clothing and shoes immediately.
Call a physician immediately.
Never give anything by mouth to an unconscious person.
If unconscious, place in recovery position and seek medical advice.
Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
Do not leave the victim unattended.
Symptoms of poisoning may appear several hours later.
No artificial respiration, mouth-to-mouth or mouth to nose. Use suitable instruments/apparatus.
- Protection of first-aiders : First Aid responders should pay attention to self-protection and use the recommended protective clothing
- If inhaled : Administer oxygen if breathing is difficult or cyanosis is observed.
If breathed in, move person into fresh air.
If not breathing, give artificial respiration.
Call a physician or poison control centre immediately.
If unconscious, place in recovery position and seek medical advice.
Keep respiratory tract clear.
- In case of skin contact : If symptoms persist, call a physician.
In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Wash contaminated clothing before re-use.
If on skin, rinse well with water.

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- If on clothes, remove clothes.
- In case of eye contact : In the case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.
- If swallowed : Call a physician immediately.
Contact a poison control center.
Rinse mouth thoroughly with water.
Keep respiratory tract clear.
Do NOT induce vomiting.
If symptoms persist, call a physician.

4.2 Most important symptoms and effects, both acute and delayed

- Symptoms : sensitising effects
- Risks : May be fatal if swallowed and enters airways.

4.3 Indication of any immediate medical attention and special treatment needed

- Treatment : Treat symptomatically and supportively.

SECTION 5: Firefighting measures

5.1 Extinguishing media

- Suitable extinguishing media : Water spray jet
Alcohol-resistant foam
Carbon dioxide (CO₂)
Dry chemical
- Unsuitable extinguishing media : High volume water jet

5.2 Special hazards arising from the substance or mixture

- Specific hazards during fire-fighting : Risk of explosion if heated under confinement.
Possible emission of gaseous decomposition products may lead to a dangerous pressure build-up.
Avoid confinement.
Contact with incompatible materials or exposure to temperatures exceeding SADT may result in a self-accelerating decomposition reaction with release of flammable vapors which may auto-ignite.
The product burns violently.
Flash back possible over considerable distance.

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Do not allow run-off from fire fighting to enter drains or water courses.
Vapours may form explosive mixtures with air.
The product will float on water and can be reignited on surface water.
Cool closed containers exposed to fire with water spray.

5.3 Advice for firefighters

- Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary. Use personal protective equipment.
- Specific extinguishing methods : Do not use a solid water stream as it may scatter and spread fire.
Remove undamaged containers from fire area if it is safe to do so.
Use water spray to cool unopened containers.
- Further information : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
Use a water spray to cool fully closed 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.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- Personal precautions : Follow safe handling advice and personal protective equipment recommendations.
Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.
Use personal protective equipment.
Ensure adequate ventilation.
Remove all sources of ignition.
Evacuate personnel to safe areas.
Never return spills in original containers for re-use.
Treat recovered material as described in the section "Disposal considerations".

6.2 Environmental precautions

- Environmental precautions : Prevent product from entering drains.
Prevent further leakage or spillage if safe to do so.
If the product contaminates rivers and lakes or drains inform respective authorities.

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6.3 Methods and material for containment and cleaning up

Methods for cleaning up : Contact with incompatible substances can cause decomposition at or below SADT.
Clear spills immediately.
Suppress (knock down) gases/vapours/mists with a water spray jet.
To clean the floor and all objects contaminated by this material, use plenty of water.
Soak up with inert absorbent material.
Isolate waste and do not reuse.
Non-sparking tools should be used.
Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.

6.4 Reference to other sections

See sections: 7, 8, 11, 12 and 13.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Technical measures : See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Advice on safe handling : Open drum carefully as content may be under pressure.
Protect from contamination.
Do not swallow.
Do not breathe vapours/dust.
Avoid exposure - obtain special instructions before use.
Avoid contact with skin and eyes.
Avoid formation of aerosol.
Take precautionary measures against static discharges.
Never return any product to the container from which it was originally removed.
Provide sufficient air exchange and/or exhaust in work rooms.
Avoid confinement.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
Smoking, eating and drinking should be prohibited in the application area.
Wash thoroughly after handling.
For personal protection see section 8.
Persons susceptible to skin sensitisation problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Advice on protection against : Take necessary action to avoid static electricity discharge

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- fire and explosion (which might cause ignition of organic vapours). Keep away from heat and sources of ignition. Use only explosion-proof equipment. Keep away from open flames, hot surfaces and sources of ignition. Keep away from combustible material. Do not spray on a naked flame or any incandescent material.
- Hygiene measures : Avoid contact with skin, eyes and clothing. Keep away from food and drink. When using do not eat or drink. When using do not smoke. Wash hands before breaks and immediately after handling the product.

7.2 Conditions for safe storage, including any incompatibilities

- Requirements for storage areas and containers : Store in original container. Keep containers tightly closed in a cool, well-ventilated place. Store in cool place. Contamination may result in dangerous pressure increases - closed containers may rupture. Observe label precautions. Store in accordance with the particular national regulations. Avoid impurities (e.g. rust, dust, ash), risk of decomposition. Electrical installations / working materials must comply with the technological safety standards. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
- Advice on common storage : Keep away from combustible materials. Keep away from strong acids, bases, heavy metal salts and other reducing substances.
- Recommended storage temperature : < 30 °C
- Further information on storage stability : Stable under recommended storage conditions.

7.3 Specific end use(s)

- Specific use(s) : For further information, refer to the product technical data sheet.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Contains no substances with occupational exposure limit values.

Derived No Effect Level (DNEL)

Substance name	End Use	Exposure routes	Potential health effects	Value
Cyclohexyldenebis[tert-butyl]	Workers	Inhalation	Long-term systemic effects	5.29 mg/m ³

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peroxide				
	Workers	Skin contact	Long-term systemic effects	15 mg/kg bw/day
tert-butyl hydroperoxide	Workers	Inhalation	Long-term systemic effects	2.2 mg/m3
	Remarks:Derived minimal effect level (DMEL)			
	Workers	Inhalation	Acute systemic effects	85.2 mg/m3
	Remarks:Derived minimal effect level (DMEL)			
	Workers	Inhalation	Long-term local effects	0.58 mg/m3
	Remarks:Derived minimal effect level (DMEL)			
	Workers	Inhalation	Acute local effects	28.4 mg/m3
	Remarks:Derived minimal effect level (DMEL)			
	Workers	Skin contact	Long-term systemic effects	0.21 mg/m3
	Remarks:Derived minimal effect level (DMEL)			

Predicted No Effect Concentration (PNEC)

Substance name	Environmental Compartment	Value
Cyclohexylidenebis[tert-butyl] peroxide	Fresh water	6.45 µg/l
	Marine water	0.645 µg/l
	Sewage treatment plant	2 mg/l
	Fresh water sediment	0.102 mg/kg dry weight (d.w.)
	Marine sediment	0.01 mg/kg dry weight (d.w.)
tert-butyl hydroperoxide	Soil	5.29 mg/kg dry weight (d.w.)
	Fresh water	0.0015 mg/l
	Marine water	0.00015 mg/l
	Fresh water sediment	0.00621 mg/kg dry weight (d.w.)
	Marine sediment	0.000621 mg/kg dry weight (d.w.)
	Agricultural soil	0.166 mg/kg dry weight (d.w.)
	Sewage treatment plant	0.17 mg/l
Secondary poisoning	1.4 mg/kg food	

8.2 Exposure controls

Engineering measures

Minimize workplace exposure concentrations.

Personal protective equipment

Eye/face protection : Ensure that eyewash stations and safety showers are close to the workstation location.
Please follow all applicable local/national requirements when selecting protective measures for a specific workplace.

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Always wear eye protection when the potential for inadvertent eye contact with the product cannot be excluded.

Tightly fitting safety goggles

Please wear suitable protective goggles. Also wear face protection if there is a splash hazard.

Hand protection

Material : Nitrile rubber
Break through time : 480 min
Glove thickness : 0.40 mm

Material : butyl-rubber
Break through time : 30 min
Glove thickness : 0.47 mm

Remarks : The data about break through time/strength of material are standard values! The exact break through time/strength of material has to be obtained from the producer of the protective glove. Choose gloves to protect hands against chemicals depending on the concentration and quantity of the hazardous substance and specific to place of work. For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Skin and body protection : Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.

Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces.

Wear as appropriate:

Flame retardant antistatic protective clothing.

Respiratory protection : In the case of dust or aerosol formation use respirator with an approved filter.

Filter type : ABEK-filter

Protective measures : The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Appearance : liquid

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Colour	:	colourless
Odour	:	characteristic
Odour Threshold	:	not determined
pH	:	substance/mixture is non-soluble (in water)
Melting point/ range	:	-25 °C
Initial boiling point and boiling range	:	Decomposition: Decomposes below the boiling point.
Flash point	:	54 °C Method: ISO 3679, closed cup
Flammability (solid, gas)	:	Not applicable
Upper explosion limit / Upper flammability limit	:	Upper explosion limit 4 %(V) (for a component of this mixture)
Lower explosion limit / Lower flammability limit	:	Lower explosion limit 0.5 %(V) (for a component of this mixture)
Vapour pressure	:	0.123 hPa (25 °C)
Relative vapour density	:	not determined
Relative density	:	not determined
Density	:	0.884 g/cm ³ (20 °C)
Solubility(ies)		
Water solubility	:	< 0.001 g/l insoluble (25 °C) Method: OECD Test Guideline 105
Partition coefficient: n-octanol/water	:	log Pow: 7.2 (25 °C) Method: OECD Test Guideline 117
Auto-ignition temperature	:	not determined
Viscosity		
Viscosity, dynamic	:	4.4 mPa.s (20 °C)
Viscosity, kinematic	:	not determined
Explosive properties	:	Not explosive In use, may form flammable/explosive vapour-air mixture.

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

9.2 Other information

Self-Accelerating decomposition temperature (SADT) : 60 °C
Method: UN-Test H.4
SADT-Self Accelerating Decomposition Temperature. Lowest temperature at which the tested package size will undergo a self-accelerating decomposition reaction.

Flammability (liquids) : Flammable liquid and vapour., Organic peroxide

Self-heating substances : Not applicable
The substance or mixture is not classified as self heating.

Refractive index : 1.4337 at 20 °C

Self-ignition : The substance or mixture is not classified as pyrophoric.

SECTION 10: Stability and reactivity

10.1 Reactivity

Stable under recommended storage conditions.
Heating may cause a fire or explosion.

10.2 Chemical stability

Stable under recommended storage conditions.
No decomposition if stored normally.

10.3 Possibility of hazardous reactions

Hazardous reactions : Vapours may form explosive mixture with air.

10.4 Conditions to avoid

Conditions to avoid : Protect from contamination.
Contact with incompatible substances can cause decomposition at or below SADT.
Heat, flames and sparks.
Avoid confinement.

10.5 Incompatible materials

Materials to avoid : Accelerators, strong acids and bases, heavy metals and heavy metal salts, reducing agents

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10.6 Hazardous decomposition products

Irritant, caustic, flammable, noxious/toxic gases and vapours can develop in the case of fire and decomposition

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Not classified due to lack of data.

Product:

Acute oral toxicity : LD50 (Rat, female): 13,342 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Acute inhalation toxicity : Remarks: This information is not available.

Acute toxicity estimate: > 20 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: Calculation method

Acute dermal toxicity : LD0 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

Acute oral toxicity : LD50 (Rat, female): 13,342 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity

Acute dermal toxicity : LD0 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 402
Assessment: The substance or mixture has no acute dermal toxicity

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Acute oral toxicity : LD50 (Rat): > 5,000 mg/kg
Method: OECD Test Guideline 401
Assessment: The substance or mixture has no acute oral toxicity
Remarks: Based on data from similar materials

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Acute inhalation toxicity : LC50 (Rat, male and female): > 5,000 mg/m³
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403

Remarks: No data available

Acute dermal toxicity : LD50 Dermal (Rabbit): 3,16 ml/kg
Method: OECD Test Guideline 402
Remarks: Based on data from similar materials

tert-butyl hydroperoxide:

Acute oral toxicity : LD50 (Rat): 560 mg/kg
Method: OECD Test Guideline 401

Acute inhalation toxicity : LC50 (Rat): 0.83 mg/l
Exposure time: 4 h
Test atmosphere: vapour
Method: OECD Test Guideline 403
Remarks: The value is calculated

Acute dermal toxicity : LD50 (Rabbit): 440 mg/kg
Method: OECD Test Guideline 402

Skin corrosion/irritation

Based on available data, the classification criteria are not met.

Product:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Mild skin irritation

Remarks : May cause skin irritation and/or dermatitis.

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

Species : Rabbit
Method : OECD Test Guideline 404
Result : Mild skin irritation

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Result : Repeated exposure may cause skin dryness or cracking.

tert-butyl hydroperoxide:

Species : Rabbit
Method : Draize Test

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Result : Corrosive, category 1C - where responses occur after exposures between 1 hour and 4 hours and observations up to 14 days.

Serious eye damage/eye irritation

Based on available data, the classification criteria are not met.

Product:

Species : Rabbit
Method : OECD Test Guideline 405
Result : No eye irritation

Remarks : Vapours may cause irritation to the eyes, respiratory system and the skin.

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

Species : Rabbit
Method : OECD Test Guideline 405
Result : No eye irritation

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Result : No eye irritation

tert-butyl hydroperoxide:

Species : Rabbit
Method : OECD Test Guideline 405
Result : Irreversible effects on the eye

Respiratory or skin sensitisation

Skin sensitisation

Not classified due to lack of data.

Respiratory sensitisation

Not classified due to lack of data.

Product:

Test Type : Buehler Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : negative
GLP : yes

Remarks : Causes sensitisation.

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Components:

Cyclohexylidenebis[tert-butyl] peroxide:

Test Type : Buehler Test
Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : negative
GLP : yes

tert-butyl hydroperoxide:

Exposure routes : Skin contact
Species : Guinea pig
Method : OECD Test Guideline 406
Result : May cause sensitisation by skin contact.

Germ cell mutagenicity

Not classified due to lack of data.

Product:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test Type: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Test system: Chinese hamster cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Test Type: Chromosome aberration test in vitro
Test system: human lymphoblastoid cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Test system: Salmonella typhimurium
Metabolic activation: with and without metabolic activation

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Method: OECD Test Guideline 471
Result: negative
GLP: yes

Test Type: Mutagenicity (Salmonella typhimurium - reverse mutation assay)
Test system: Chinese hamster ovary cells
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 476
Result: negative
GLP: yes

Test Type: Chromosome aberration test in vitro
Test system: Human lymphocytes
Metabolic activation: with and without metabolic activation
Method: OECD Test Guideline 473
Result: negative
GLP: yes

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Germ cell mutagenicity- Assessment : No known effect.

tert-butyl hydroperoxide:

Genotoxicity in vitro : Test Type: Bacterial reverse mutation assay (AMES)
Method: Directive 67/548/EEC, Annex, B.13/14
Result: positive

Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: positive

Test Type: In vitro mammalian cell gene mutation test
Method: Directive 67/548/EEC, Annex, B.17
Result: positive

Genotoxicity in vivo : Test Type: Chromosomal aberration
Species: Mouse (male and female)
Application Route: Intravenous
Method: Directive 67/548/EEC, Annex V, B.12.
Result: negative

Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Mouse (males)
Application Route: Intraperitoneal
Method: Directive 67/548/EEC, Annex, B.22
Result: positive

Test Type: In vivo mammalian alkaline comet assay

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Species: Rat (male)
Application Route: inhalation (vapour)
Method: OECD Test Guideline 489
Result: negative

Germ cell mutagenicity- Assessment : Positive result(s) from in vivo somatic cell mutagenicity tests supported by positive results from in vitro mutagenicity assays or chemical structure activity relationship to known germ cell mutagens

Carcinogenicity

Not classified due to lack of data.

Components:

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Carcinogenicity - Assessment : No known effect.

tert-butyl hydroperoxide:

Species : Rat, male and female
Application Route : inhalation (vapour)
NOAEC : 15 mg/l
Method : OECD Test Guideline 451
Result : Suspected of causing cancer if inhaled.
GLP : yes

Carcinogenicity - Assessment : Limited evidence of carcinogenicity in animal studies, Suspected of causing cancer if inhaled.

Reproductive toxicity

Not classified due to lack of data.

Product:

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat, male and female
Application Route: Oral
General Toxicity - Parent: NOAEL: 200 mg/kg bw/day
General Toxicity F1: NOAEL: 600 mg/kg bw/day
Fertility: NOAEL: 600 mg/kg bw/day
Method: OECD Test Guideline 422
Result: negative
GLP: yes

Effects on foetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion

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Method: OECD Test Guideline 422
Result: negative

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat, male and female
Application Route: Oral
General Toxicity - Parent: NOAEL: 200 mg/kg bw/day
General Toxicity F1: NOAEL: 600 mg/kg bw/day
Fertility: NOAEL: 600 mg/kg bw/day
Method: OECD Test Guideline 422
Result: negative
GLP: yes

Effects on foetal development : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Method: OECD Test Guideline 422
Result: negative

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Reproductive toxicity - Assessment : No known effect.

tert-butyl hydroperoxide:

Effects on fertility : Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat, male and female
Application Route: Oral
General Toxicity F1: NOAEL: 21 mg/kg body weight
Method: OECD Test Guideline 422
GLP: yes

Effects on foetal development : Test Type: Prenatal development toxicity study (teratogenicity)
Species: Rat, female
Application Route: Oral
General Toxicity Maternal: NOAEL: 35 mg/kg body weight
Developmental Toxicity: NOAEL: >= 35 mg/kg body weight
Method: OECD Test Guideline 414
GLP: yes

STOT - single exposure

Not classified due to lack of data.

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Components:

tert-butyl hydroperoxide:

Exposure routes : Inhalation
Assessment : May cause respiratory irritation.

STOT - repeated exposure

Not classified due to lack of data.

Components:

tert-butyl hydroperoxide:

Assessment : The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Remarks : Not classified due to data which are conclusive although insufficient for classification.

Repeated dose toxicity

Product:

Species : Rat, male and female
NOAEL : 150 mg/kg bw/day
Application Route : Oral
Exposure time : 90
Method : OECD Test Guideline 408

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

Species : Rat, male and female
NOAEL : 150 mg/kg bw/day
Application Route : Oral
Exposure time : 90
Method : OECD Test Guideline 408

tert-butyl hydroperoxide:

Species : Rat, male and female
NOAEL : 21 mg/kg bw/day
Application Route : Oral
Method : OECD Test Guideline 422
GLP : yes

Species : Rat, male and female
NOAEC : 22.2 mg/m³
Application Route : inhalation (vapour)
Method : OECD Test Guideline 412
GLP : yes

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Aspiration toxicity

May be fatal if swallowed and enters airways.

Product:

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

May be fatal if swallowed and enters airways.

tert-butyl hydroperoxide:

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

Further information

Product:

Remarks : Solvents may degrease the skin.

Components:

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Remarks : May cause headache and dizziness.

SECTION 12: Ecological information

12.1 Toxicity

Product:

Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 0.64 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes
Remarks: No toxicity at the limit of solubility

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 0.598 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes

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- Remarks: No toxicity at the limit of solubility
- Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 0.5 mg/l
Exposure time: 72 h
Test Type: Growth inhibition
Method: OECD Test Guideline 201
GLP: yes
Remarks: No toxicity at the limit of solubility
- Toxicity to fish (Chronic toxicity) : NOEC: 0.0645 mg/l
Exposure time: 35 d
Species: Danio rerio (zebra fish)
Test Type: flow-through test
Method: OECD Test Guideline 210
GLP: yes
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: \geq 0.112 mg/l
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Method: OECD Test Guideline 211
GLP: yes
Remarks: No toxicity at the limit of solubility
- Toxicity to microorganisms : EC50 : > 20 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition
Method: OECD Test Guideline 209

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

- Toxicity to fish : LC50 (Danio rerio (zebra fish)): > 0.64 mg/l
Exposure time: 96 h
Test Type: semi-static test
Method: OECD Test Guideline 203
GLP: yes
Remarks: No toxicity at the limit of solubility
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 0.598 mg/l
Exposure time: 48 h
Test Type: static test
Method: OECD Test Guideline 202
GLP: yes
Remarks: No toxicity at the limit of solubility
- Toxicity to algae/aquatic plants : ErC50 (Pseudokirchneriella subcapitata (green algae)): > 0.5 mg/l
Exposure time: 72 h
Test Type: Growth inhibition

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

Toxicity to microorganisms : EC50 : > 20 mg/l
Exposure time: 3 h
Test Type: Respiration inhibition
Method: OECD Test Guideline 209

Toxicity to fish (Chronic toxicity) : NOEC: 0.0645 mg/l
Exposure time: 35 d
Species: Danio rerio (zebra fish)
Test Type: flow-through test
Method: OECD Test Guideline 210
GLP: yes

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: >= 0.112 mg/l
Species: Daphnia magna (Water flea)
Test Type: semi-static test
Method: OECD Test Guideline 211
GLP: yes
Remarks: No toxicity at the limit of solubility

M-Factor (Chronic aquatic toxicity) : 1

Toxicity to soil dwelling organisms : NOEC:
52,9 milligram per kilogram
Species: Eisenia fetida (earthworms)
Method: OECD Test Guideline 222

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia (water flea)): > 0.04 mg/l
Exposure time: 48 h
Remarks: Information given is based on data obtained from similar substances.

Toxicity to algae/aquatic plants : IC50 (algae): > 0.04 mg/l
Exposure time: 72 h
Remarks: Information given is based on data obtained from similar substances.

Ecotoxicology Assessment

Acute aquatic toxicity : This product has no known ecotoxicological effects.

Chronic aquatic toxicity : May cause long lasting harmful effects to aquatic life.

tert-butyl hydroperoxide:

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 29.61 mg/l

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Exposure time: 96 h
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 14.07 mg/l
Exposure time: 48 h
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 1.47 mg/l
Exposure time: 72 h
Method: OECD Test Guideline 201

NOEC (Pseudokirchneriella subcapitata (green algae)): 0.22 mg/l
Method: OECD Test Guideline 201

Toxicity to microorganisms : EC50 (Bacteria): 17 mg/l
Method: OECD Test Guideline 209

Ecotoxicology Assessment

Acute aquatic toxicity : Toxic to aquatic life.

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Product:

Biodegradability : Inoculum: activated sludge
Concentration: 10 mg/l
Result: Not inherently biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
GLP: yes

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

Biodegradability : Inoculum: activated sludge
Concentration: 10 mg/l
Result: Not inherently biodegradable.
Biodegradation: 5 %
Exposure time: 28 d
Method: OECD Test Guideline 301B
GLP: yes

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Biodegradability : Result: Not readily biodegradable.

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tert-butyl hydroperoxide:

Biodegradability : Result: Not readily biodegradable.
Method: OECD Test Guideline 301B

Result: Not readily biodegradable.
Method: OECD Test Guideline 301D

12.3 Bioaccumulative potential

Components:

Cyclohexylidenebis[tert-butyl] peroxide:

Partition coefficient: n- : log Pow: 7.2 (25 °C)
octanol/water Method: OECD Test Guideline 117

Hydrocarbons, C4, 1,3-butadiene-free, polymerised., triisobutylene fraction, hydrogenated:

Partition coefficient: n- : log Pow: 5.94 - 6.16 (20 °C)
octanol/water Remarks: The value is calculated

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

12.6 Other adverse effects

Product:

Endocrine disrupting potential : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

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SECTION 13: Disposal considerations

13.1 Waste treatment methods

- Product : Dispose of wastes in an approved waste disposal facility.
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.
- Contaminated packaging : Dispose of in accordance with local regulations.
Clean container with water.
Dispose of contents/ container to an approved waste disposal plant.
Empty remaining contents.
Dispose of as unused product.
Do not re-use empty containers.
Do not burn, or use a cutting torch on, the empty drum.
-

SECTION 14: Transport information

14.1 UN number

- ADR : UN 3103
RID : UN 3103
IMDG : UN 3103
IATA : UN 3103

14.2 UN proper shipping name

- ADR : ORGANIC PEROXIDE TYPE C, LIQUID
(1,1-DI-(tert-BUTYLPEROXY) CYCLOHEXANE)
RID : ORGANIC PEROXIDE TYPE C, LIQUID
(1,1-DI-(tert-BUTYLPEROXY) CYCLOHEXANE)
IMDG : ORGANIC PEROXIDE TYPE C, LIQUID
(1,1-DI-(tert-BUTYLPEROXY)CYCLOHEXANE)
IATA : Organic peroxide type C, liquid
(1,1-Di-(tert-butylperoxy) cyclohexane)

14.3 Transport hazard class(es)

- | | Class | Subsidiary risks |
|------|-------|------------------|
| ADR | : 5.2 | |
| RID | : 5.2 | |
| IMDG | : 5.2 | |
| IATA | : 5.2 | HEAT |
-

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14.4 Packing group

ADR

Packing group : Not assigned by regulation
Classification Code : P1
Labels : 5.2
Tunnel restriction code : (D)

RID

Packing group : Not assigned by regulation
Classification Code : P1
Hazard Identification Number : 539
Labels : 5.2

IMDG

Packing group : Not assigned by regulation
Labels : 5.2
EmS Code : F-J, S-R

IATA (Cargo)

Packing instruction (cargo aircraft) : 570
Packing group : Not assigned by regulation
Labels : Organic Peroxides, Keep Away From Heat

IATA (Passenger)

Packing instruction (passenger aircraft) : 570
Packing group : Not assigned by regulation
Labels : Organic Peroxides, Keep Away From Heat

14.5 Environmental hazards

ADR

Environmentally hazardous : yes

RID

Environmentally hazardous : yes

IMDG

Marine pollutant : yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable for product as supplied.

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SECTION 15: Regulatory information

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

Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17)	:	Conditions of restriction for the following entries should be considered: Number on list 3
UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	:	Number on list 40 Not applicable
The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain)	:	Not applicable
Regulation (EC) on substances that deplete the ozone layer	:	Not applicable
UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable
GB Export and import of hazardous chemicals - Prior Informed Consent (PIC) Regulation	:	Not applicable
Control of Major Accident Hazards Regulations 2015 (COMAH)	P6b	SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES
	E1	ENVIRONMENTAL HAZARDS

Other regulations:

Take note of The Management of Health and Safety at Work Regulations 1999 (requirements relating to new and expectant mothers at work contained in Regulation 16 to 18) and of the Pregnant Workers Directive 92/85/EEC.

Take note of The Management of Health and Safety at Work Regulations 1999 (requirements relating to protection of young people at work contained in Regulation 19) and of Directive 94/33/EC on the protection of young people at work.

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

TCSI (TW)	:	On the inventory, or in compliance with the inventory
DSL (CA)	:	All components of this product are on the Canadian DSL

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ENCS (JP) : On the inventory, or in compliance with the inventory
ISHL (JP) : On the inventory, or in compliance with the inventory
PICCS (PH) : On the inventory, or in compliance with the inventory
IECSC (CN) : On the inventory, or in compliance with the inventory
TECI (TH) : On the inventory, or in compliance with the inventory

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance.
For further information see eSDS.

SECTION 16: Other information

Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECHA - European Chemicals Agency; EC-Number - European Community number; 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; 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; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; 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; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; SVHC - Substance of very high concern; TCSI - Taiwan Chemical Substance Inventory; 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

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Further information

Other information : This safety datasheet only contains information relating to safety and does not replace any product information or product specification.
These safety instructions also apply to empty packaging which may still contain product residues.
The hazards on the label also apply to residues in the container.

Sources of key data used to compile the Safety Data Sheet : Internal technical data, data from raw material SDSs, OECD eChem Portal search results and European Chemicals Agency, <http://echa.europa.eu/>

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.

GB / EN