

SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier

Trade name : BUTANOX HBO-50

UFI : 5VN1-V0P5-V006-CFHM

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

Use of the Substance/Mixture : Specific use(s): Curing agent

1.3 Details of the supplier of the safety data sheet

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

Telephone : +31889840367

Telefax :

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

1.4 Emergency telephone number

Emergency telephone number : 24 hours:+31 57 06 79211, US-CHEMTREC:1-800-424-9300, CA-CANUTEC:1-613-996-6666, JP: +81 (836) 74 8810, CN: 化学事故应急咨询电话 : +86 532 8388 9090-: Nouryon Emergency Response Centre: +31 570 679211
Poison Centre: +43 1 406 43 43

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

Organic peroxides, D, H242
Acute toxicity, 4, H302
Acute toxicity, 4, H332
Skin corrosion, 1B, H314
Serious eye damage, 1, H318

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

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Pictogram



Signal word

: Danger

Hazard statements

: H242
H302 + H332
H314

Heating may cause a fire.
Harmful if swallowed or if inhaled.
Causes severe skin burns and eye damage.

Precautionary statements

: **Prevention:**
P210

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P234
P280

Keep only in original packaging.
Wear protective gloves/ protective clothing/ eye protection/ face protection/ hearing protection.

Response:

P303 + P361 + P353

IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.

P305 + P351 + P338 + P310

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.

P370 + P378

In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide to extinguish.

Hazardous components which must be listed on the label:

Methyl ethyl ketone peroxide; Reaction mass of butane- 1338-23-4
2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane

2.3 Other hazards

No further data available.

PBT and vPvB assessment : This substance/mixture contains no components considered

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

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

3.2 Mixtures

Pure substance/mixture : Mixture

Hazardous substance

Chemical name	PBT vPvB OEL	CAS-No. EC-No. REACH No.	Classification (REGULATION (EC) No 1272/2008)	Concentration [%]
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane		1338-23-4 700-954-4 01-2119514691-43	Org. Perox. A; H240 Acute Tox. 4; H302 Acute Tox. 4; H332 Skin Corr. 1B; H314 Eye Dam. 1; H318	>= 30 - <= 37
Diethylene glycol		111-46-6 203-872-2 01-2119457857-21	Acute Tox. 4; H302	>= 1 - <= 5
Methyl ethyl ketone		78-93-3	Flam. Liq. 2; H225 Eye Irrit. 2; H319 STOT SE 3; H336	>= 1 - <= 5

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

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

- General advice : Immediate medical attention is required.
Move out of dangerous area.
Show this safety data sheet to the doctor in attendance.
- If inhaled : If breathed in, move person into fresh air.
Consult a physician after significant exposure.
- In case of skin contact : Take off contaminated clothing and shoes immediately.
Rinse immediately with plenty of water.
Immediate medical treatment is necessary as untreated wounds from corrosion of the skin heal slowly and with difficulty.
- In case of eye contact : Rinse with plenty of water.
Get medical attention immediately. Continue to rinse during transport.
Remove contact lenses.
Protect unharmed eye.
Keep eye wide open while rinsing.
Small amounts splashed into eyes can cause irreversible

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

tissue damage and blindness.

If swallowed : Clean mouth with water and drink afterwards plenty of water.
Never give anything by mouth to an unconscious person.
Take victim immediately to hospital.
Do not induce vomiting! May cause chemical burns in mouth and throat.

4.2 Most important symptoms and effects, both acute and delayed

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

Risks : Harmful if swallowed or if inhaled.
Causes serious eye damage.
Causes severe burns.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

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

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting / Specific hazards arising from the chemical : CAUTION: reignition may occur.
Supports combustion.
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

5.3 Advice for firefighters

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.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions : Use personal protective equipment.
Wear respiratory protection.
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.

6.2 Environmental precautions

Environmental precautions : Prevent product from entering drains.
Discharge into the environment must be avoided.

6.3 Methods and materials for containment and cleaning up

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.

6.4 Reference to other sections

For disposal considerations see section 13.
For personal protection see section 8.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling : For personal protection see section 8.
Avoid formation of aerosol.
Do not breathe vapours or spray mist.
Smoking, eating and drinking should be prohibited in the application area.
Provide sufficient air exchange and/or exhaust in work rooms.
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.
Keep away from sources of ignition - No smoking.
No sparking tools should be used.
Keep away from reducing agents (e.g. amines), acids, alkalis and heavy metal compounds (e.g. accelerators, driers, metal soaps).
Do not cut or weld on or near this container even when empty.

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

Keep away from combustible material.

Temperature class : It is recommended to use electrical equipment of temperature group T3. However, autoignition can never be excluded.

7.2 Conditions for safe storage, including any incompatibilities

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: -25 °C
Maximum storage temperature: : 25 °C
Other data : Maximum storage temperature is for quality only.

7.3 Specific end use(s)

Specific use(s) : Consult the technical guidelines for the use of this substance/mixture.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Diethylene glycol	111-46-6	MAK-TMW	10 ppm 44 mg/m ³	AT OEL
		MAK-KZW	40 ppm 176 mg/m ³	AT OEL
Methyl ethyl ketone	78-93-3	STEL	300 ppm 900 mg/m ³	2000/39/EC
	Further information: Indicative			
		TWA	200 ppm 600 mg/m ³	2000/39/EC
	Further information: Indicative			
		MAK-TMW	100 ppm 295 mg/m ³	AT OEL
	Further information: Risk of skin absorption			
		MAK-KZW	200 ppm 590 mg/m ³	AT OEL
	Further information: Risk of skin absorption			
		TWA	200 ppm	ACGIH
		STEL	300 ppm	ACGIH

Occupational exposure limits of decomposition products

Components	CAS-No.	Value type (Form of exposure)	Control parameters	Basis
Formic acid	64-18-6	TWA	5 ppm 9 mg/m ³	2006/15/EC

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

Further information: Indicative				
		MAK-TMW	5 ppm 9 mg/m ³	AT OEL
		MAK-KZW	5 ppm 9 mg/m ³	AT OEL
		TWA	5 ppm	ACGIH
		STEL	10 ppm	ACGIH
Acetic acid	64-19-7	TWA	10 ppm 25 mg/m ³	2017/164/EU
Further information: Indicative				
		STEL	20 ppm 50 mg/m ³	2017/164/EU
Further information: Indicative				
		MAK-TMW	10 ppm 25 mg/m ³	AT OEL
		MAK-KZW	20 ppm 50 mg/m ³	AT OEL
		TWA	10 ppm	ACGIH
		STEL	15 ppm	ACGIH
Propionic acid	79-09-4	STEL	20 ppm 62 mg/m ³	2000/39/EC
Further information: Indicative				
		TWA	10 ppm 31 mg/m ³	2000/39/EC
Further information: Indicative				
		MAK-TMW	10 ppm 31 mg/m ³	AT OEL
		MAK-KZW	20 ppm 62 mg/m ³	AT OEL
		TWA	10 ppm	ACGIH
Methyl ethyl ketone	78-93-3	STEL	300 ppm 900 mg/m ³	2000/39/EC
Further information: Indicative				
		TWA	200 ppm 600 mg/m ³	2000/39/EC
Further information: Indicative				
		MAK-TMW	100 ppm 295 mg/m ³	AT OEL
Further information: Risk of skin absorption				
		MAK-KZW	200 ppm 590 mg/m ³	AT OEL
Further information: Risk of skin absorption				
		TWA	200 ppm	ACGIH
		STEL	300 ppm	ACGIH

Derived No Effect Level (DNEL) according to Regulation (EC) No. 1907/2006:

Substance name	End Use	Exposure routes	Potential health effects	Value
Methyl ethyl ketone	Workers	Inhalation	Long-term systemic effects	600 mg/m ³
	Workers	Skin contact	Long-term systemic effects	1161 mg/kg
	Consumers	Inhalation	Long-term systemic	106 mg/m ³

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

			effects	
	Consumers	Skin contact	Long-term systemic effects	412 mg/kg
	Consumers	Ingestion	Long-term systemic effects	31 mg/kg
Diethylene glycol	Workers	Inhalation	Long-term systemic effects	44 mg/m ³
	Workers	Inhalation	Long-term local effects	60 mg/m ³
	Workers	Dermal	Long-term systemic effects	43 mg/kg bw/day
	Consumers	Inhalation	Long-term systemic effects	12 mg/m ³
	Consumers	Inhalation	Long-term local effects	12 mg/m ³
	Consumers	Dermal	Long-term systemic effects	21 mg/kg bw/day
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	Consumers	Skin contact	Long-term systemic effects	0,54 mg/kg
	Consumers	Inhalation	Long-term systemic effects	0,41 mg/m ³
	Consumers	Ingestion	Long-term systemic effects	0,27 mg/kg
	Workers	Skin contact	Long-term systemic effects	1,08 mg/kg
	Workers	Inhalation	Long-term systemic effects	1,9 mg/m ³
Dimethyl phthalate	Consumers	Ingestion	Long-term systemic effects	25 mg/kg
	Consumers	Inhalation	Long-term systemic effects	86,96 mg/m ³
	Consumers	Skin contact	Long-term systemic effects	60 mg/kg
	Workers	Inhalation	Long-term systemic effects	293,86 mg/m ³
	Workers	Skin contact	Long-term systemic effects	100 mg/kg

Predicted No Effect Concentration (PNEC) according to Regulation (EC) No. 1907/2006:

Substance name	Environmental Compartment	Value
Methyl ethyl ketone	Fresh water	55,8 mg/l
	Marine water	55,8 mg/l
	Intermittent water	55,8 mg/l
	Sewage treatment plant	709 mg/l
	Fresh water sediment	284,74 mg/kg dry weight
	Marine sediment	284,74 mg/kg dry weight
	Soil	22,5 mg/kg dry weight
	Oral	1000 mg/kg food

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

Diethylene glycol	Fresh water	10 mg/l
	Marine water	1 mg/l
	Intermittent water	10 mg/l
	Sewage treatment plant	199,5 mg/l
	Fresh water sediment	20,9 mg/kg dry weight (d.w.)
	Marine sediment	2,09 mg/kg dry weight (d.w.)
	Soil	1,53 mg/kg dry weight (d.w.)
Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane	Fresh water	0,0056 mg/l
	Intermittent water	0,056 mg/l
	Marine water	0,00056 mg/l
	Fresh water sediment	0,019 mg/kg dry weight
	Marine sediment	0,0019 mg/kg dry weight
	Sewage treatment plant	1,2 mg/l
	Soil	0,00231 mg/kg dry weight
Dimethyl phthalate	Fresh water	0,192 mg/l
	Marine water	0,0192 mg/l
	Intermittent water	0,39 mg/l
	Sewage treatment plant	4 mg/l
	Fresh water sediment	1,403 mg/kg dry weight
	Soil	3,16 mg/kg dry weight

8.2 Exposure controls

Engineering measures

Explosion proof ventilation recommended.

Effective exhaust ventilation system

Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protective equipment

Eye protection : Tightly fitting safety goggles
Wear face-shield and protective suit for abnormal processing problems.

Hand protection

Material : Neoprene

Material : Nitrile rubber

Remarks : Breakthrough time is not determined for the product. Change gloves often!

Material : butyl-rubber

Break through time : >= 480 min

Glove thickness : 0,5 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.

- Skin and body protection : Protective suit
- Respiratory protection : In the case of vapour or aerosol formation use a respirator with an approved filter.
Filter A
- 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.
Discharge into the environment must be avoided.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

- Physical state : Clear liquid
- Colour : colourless
- Odour : Faint.
- Odour Threshold : No data available
- Melting point : No data available
- Boiling point/boiling range : Decomposes below the boiling point.
- Upper explosion limit / Upper flammability limit : Not applicable
- Lower explosion limit / Lower flammability limit : Not applicable
- Flash point : Above the SADT value
- Auto-ignition temperature : Test method not applicable
- Decomposition temperature
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.

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

Self-Accelerating decomposition temperature (SADT)	: 65 °C
pH	: substance/mixture not stable
Viscosity	
Viscosity, dynamic	: ca. 16 mPa.s (20 °C)
Viscosity, kinematic	: ca. 13,56 mm ² /s (20 °C)
Solubility(ies)	
Water solubility	: partly miscible
Solubility in other solvents	: Soluble in:, Phthalates
Partition coefficient: n-octanol/water	: No data available
Vapour pressure	: not determined
Relative density	: 1,18 (20 °C)
Bulk density	: Not applicable
Relative vapour density	: No data available

9.2 Other information

Explosives	: Not explosive
Oxidizing properties	: Not classified as oxidising.
Flammability (liquids)	: Decomposition products may be flammable.
Evaporation rate	: No data available
Active Oxygen Content	: 9,8 - 10,0 %
Organic peroxides	: 33 %

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

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Stable under normal conditions.

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

No dangerous reaction known under conditions of normal use.

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

10.4 Conditions to avoid

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

10.5 Incompatible materials

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.

10.6 Hazardous decomposition products

Hazardous decomposition products : Carbon oxides
Formic acid
Acetic acid
Propionic acid
Methyl ethyl ketone

Thermal decomposition : SADT - (Self accelerating decomposition temperature) is the lowest temperature at which self accelerating decomposition may occur with a substance in the packaging as used in transport. A dangerous self-accelerating decomposition reaction and, under certain circumstances, explosion or fire can be caused by thermal decomposition at and above the SADT. Contact with incompatible substances can cause decomposition below the SADT.

Self-Accelerating decomposition temperature (SADT) : 65 °C

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Product information:

Acute toxicity : Harmful if swallowed or if inhaled.

Skin corrosion/irritation : Causes severe burns.

Serious eye damage/eye irritation : Causes serious eye damage.

Respiratory or skin sensitisation : Respiratory sensitisation: Not classified based on available information.
Skin sensitisation: Not classified based on available information.

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

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.
Further information	:	No further data available.

Test result

Acute oral toxicity	:	LD50 Oral: 986 mg/kg Species: rats The value is calculated
Acute inhalation toxicity	:	LC50 (Rat): 1,6 mg/l Exposure time: 4 h Test atmosphere: dust/mist The value is calculated
Acute dermal toxicity	:	LD50: 4 124 mg/kg Species: Rabbit The value is calculated

Toxicology data for the components:

Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane

Acute toxicity:

Acute oral toxicity	:	LD50: 1 017 mg/kg Species: Rat Method: OECD Test Guideline 401
Acute inhalation toxicity	:	LC50 (Rat, male and female): 1,5 mg/l Exposure time: 4 h Test atmosphere: dust/mist Method: OECD Test Guideline 403 GLP: no
Acute dermal toxicity	:	LD50: 4 000 mg/kg Species: Rabbit Method: OECD Test Guideline 402
Skin corrosion/irritation	:	Result: Causes burns.
Serious eye damage/eye irritation	:	Result: Risk of serious damage to eyes.
Germ cell mutagenicity	:	
Genotoxicity in vitro	:	Ames test Result: negative
Genotoxicity in vivo	:	Not classified due to data which are conclusive although

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

insufficient for classification.

Carcinogenicity	: No data available
Reproductive toxicity/Fertility	: Species: Rat, male and female Application Route: Oral Dose: 0 25, 50, 75 milligram per kilogram General Toxicity - Parent: No observed adverse effect level: 50 mg/kg bw/day General Toxicity F1: No observed adverse effect level F1: 50 mg/kg bw/day Fertility: No observed adverse effect level Parent: 75 mg/kg bw/day Method: OECD Test Guideline 421 GLP: yes
STOT - repeated exposure	: The substance or mixture is not classified as specific target organ toxicant, repeated exposure.
Aspiration hazard	: No aspiration toxicity classification
Diethylene glycol	
Acute toxicity:	
Acute oral toxicity	: LD50 Oral: > 300 - 2 000 mg/kg Species: Rat
Acute inhalation toxicity	: Not classified due to data which are conclusive although insufficient for classification.
Acute dermal toxicity	: Based on available data, the classification criteria are not met.
Skin corrosion/irritation	: Species: Rabbit Result: No skin irritation Method: Draize Test Exposure time: 23 h Information taken from reference works and the literature.
Serious eye damage/eye irritation	: Species: Rabbit Result: No eye irritation Exposure time: 24 h Information taken from reference works and the literature.
Respiratory or skin sensitisation	: Maximisation Test Species: Guinea pig Result: Does not cause skin sensitisation. Method: Regulation (EC) No. 440/2008, Annex, B.6
Repeated dose toxicity	: Species: Rat, male and female NOAEL: 936 mg/kg bw/day Application Route: Oral Method: OECD Test Guideline 407 GLP: yes Species: Dog, male

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

NOAEL: 2220 mg/kg bw/day
Application Route: Dermal
Method: OECD Test Guideline 410
GLP: yes

Germ cell mutagenicity

Genotoxicity in vitro : Ames test
Salmonella typhimurium
Result: negative
Method: OECD Test Guideline 471

Genotoxicity in vivo : Micronucleus test
Species: Mouse
Method: OECD Test Guideline 474
Result: negative

Carcinogenicity : Species: Rat, (male and female)
Application Route: Oral
NOAEL: > 1 160 mg/kg bw/day
Information taken from reference works and the literature.

Reproductive toxicity/Fertility : Test Type: Two-generation study
Species: Mouse, male and female
Application Route: Oral
General Toxicity - Parent: No observed adverse effect level: 3 060 mg/kg bw/day

Reproductive toxicity/Development/Teratogenicity : Test Type: Pre-natal
Species: Rabbit
Application Route: Oral
General Toxicity Maternal: No observed adverse effect level: 1 000 mg/kg bw/day
Method: OECD Test Guideline 414
GLP: yes

Methyl ethyl ketone

Acute toxicity:

Acute oral toxicity : LD50: 2 737 mg/kg
Species: Rat

Acute dermal toxicity : LD50: 6 480 mg/kg
Species: Rabbit

Skin corrosion/irritation : Result: Repeated exposure may cause skin dryness or cracking.
Moderately irritating.

Serious eye damage/eye irritation : Result: Irritating to eyes.

STOT - single exposure : Exposure routes: Inhalation
The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

Aspiration hazard : No aspiration toxicity classification

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment : 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.

SECTION 12: ECOLOGICAL INFORMATION

Product information:

Ecotoxicology Assessment

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

12.1 Toxicity

Test result

- Toxicity to fish : LC50: 45,6 mg/l
Exposure time: 96 h
Species: Poecilia reticulata (guppy)
Test Type: semi-static test
The value is calculated
- Toxicity to daphnia and other aquatic invertebrates : 40 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)
Test Type: Immobilization
The value is calculated
- Toxicity to algae : ErC50: 5,8 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (algae)
Test Type: Growth inhibition
The value is calculated
- Toxicity to bacteria : EC10: 12 mg/l
Exposure time: 0,5 h
Species: activated sludge
Test Type: Respiration inhibition
Method: Domestic OECD Guideline 209
The value is calculated

Components:

Test result

Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane

Toxicity to fish : LC50: 44,2 mg/l
Exposure time: 96 h
Species: Poecilia reticulata (guppy)
Test Type: semi-static test

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

Method: OECD Test Guideline 203

NOEC: 18 mg/l

Exposure time: 96 h

Species: *Poecilia reticulata* (guppy)

Test Type: semi-static test

Method: OECD Test Guideline 203

Toxicity to daphnia and other
aquatic invertebrates

: EC50: 39 mg/l

Exposure time: 48 h

Species: *Daphnia magna* (Water flea)

Test Type: Immobilization

Method: OECD Test Guideline 202

NOEC: 26,7 mg/l

Exposure time: 24 h

Species: *Daphnia magna* (Water flea)

Test Type: Immobilization

Method: OECD Test Guideline 202

Toxicity to algae

: ErC50: 5,6 mg/l

Exposure time: 72 h

Species: *Pseudokirchneriella subcapitata* (algae)

Test Type: Growth inhibition

Method: OECD Test Guideline 201

NOEC: 2,1 mg/l

Exposure time: 72 h

Species: *Pseudokirchneriella subcapitata* (algae)

Test Type: Growth inhibition

Method: OECD Test Guideline 201

Toxicity to bacteria

: EC50: 48 mg/l

Exposure time: 0,5 h

Species: activated sludge

Test Type: Respiration inhibition

Method: Domestic OECD Guideline 209

EC10: 12 mg/l

Exposure time: 0,5 h

Species: activated sludge

Test Type: Respiration inhibition

Method: Domestic OECD Guideline 209

Diethylene glycol

Toxicity to fish

: LC50: 75 200 mg/l

Exposure time: 96 h

Species: *Pimephales promelas* (fathead minnow)

Test Type: flow-through test

Analytical monitoring: yes

Toxicity to fish (Chronic
toxicity)

: NOEC: 15 380 mg/l

Exposure time: 7 d

Species: *Pimephales promelas* (fathead minnow)

Information taken from reference works and the literature.

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC: 8 590 mg/l
Species: Ceriodaphnia dubia (water flea)
Information taken from reference works and the literature.

Methyl ethyl ketone

Toxicity to fish : LC50: 3 220 mg/l
Exposure time: 96 h
Species: Lepomis macrochirus (Bluegill sunfish)

12.2 Persistence and degradability

Product information : No information available.

Components:

Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane

Biodegradability : Result: Readily biodegradable.
Method: Closed Bottle test

Diethylene glycol

Biodegradability : Test Type: CO2 Evolution Test
Inoculum: activated sludge, non-adapted
Result: Readily biodegradable.
Biodegradation: 70 - 80 %
Exposure time: 28 d
Method: OECD Test Guideline 301B

Methyl ethyl ketone

Biodegradability : Result: Readily biodegradable.

12.3 Bioaccumulative potential

Product information : No information available.

Components:

Methyl ethyl ketone peroxide; Reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane

Bioaccumulation : Bioconcentration factor (BCF): 10,3
Not expected considering the low log Pow value.

Diethylene glycol

Bioaccumulation : Bioaccumulation is unlikely.

12.4 Mobility in soil

Product information : No information available.

Components:

Diethylene glycol

Mobility : Adsorption to the solid soil particles is not expected.

12.5 Results of PBT and vPvB assessment

Product information:

PBT and vPvB assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Components:

Diethylene glycol

PBT and vPvB assessment : This substance is not considered to be a PBT (Persistent, Bioaccumulation, Toxic)
This substance is not considered to be vPvB (very Persistent nor very Bioaccumulating)

12.6 Endocrine disrupting properties

Product information:

Assessment : 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.

12.7 Other adverse effects

Product information : No information available.

Components:

Diethylene glycol

Biochemical Oxygen Demand (BOD) : No data available

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

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.

SECTION 14: TRANSPORT INFORMATION

14.1 UN number

ADN : UN 3105
ADR : UN 3105
RID : UN 3105
IMDG-Code : UN 3105
IATA-DGR : UN 3105

14.2 Proper shipping name

ADN : ORGANIC PEROXIDE TYPE D, LIQUID

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

ADR	(Methyl ethyl ketone peroxide) : ORGANIC PEROXIDE TYPE D, LIQUID
RID	(Methyl ethyl ketone peroxide) : ORGANIC PEROXIDE TYPE D, LIQUID
IMDG-Code	(Methyl ethyl ketone peroxide) : ORGANIC PEROXIDE TYPE D, LIQUID
IATA-DGR	(Methyl ethyl ketone peroxide) : Organic peroxide type D, liquid (Methyl ethyl ketone peroxide)

14.3 Transport hazard class

ADN	: 5.2
ADR	: 5.2
RID	: 5.2
IMDG-Code	: 5.2
IATA-DGR	: 5.2

14.4 Packing group

ADN	
Packing group	: Not Assigned
Classification Code	: P1
Labels	: 5.2

ADR	
Packing group	: Not Assigned
Classification Code	: P1
Labels	: 5.2
Tunnel restriction code	: (D)

RID	
Packing group	: Not Assigned
Classification Code	: P1
Hazard Identification Number	: 539
Labels	: 5.2

IMDG-Code	
Packing group	: Not Assigned
Labels	: 5.2
EmS Code	: F-J, S-R

IATA-DGR	
Packing instruction (cargo aircraft)	: 570
Packing instruction (passenger aircraft)	: 570
Packing group	: Not Assigned
Labels	: 5.2 (HEAT)

14.5 Environmental hazards

ADN	
Environmentally hazardous	: no

ADR	
Environmentally hazardous	: no

RID	
Environmentally hazardous	: no

IMDG-Code	
Marine pollutant	: no

IATA-DGR

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

Environmentally hazardous : no

14.6 Special precautions for user

Not applicable

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

Not applicable for product as supplied.

SECTION 15: REGULATORY INFORMATION

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

REACH - Restrictions on the manufacture, placing on the market and use of certain dangerous substances, preparations and articles (Annex XVII) : Conditions of restriction for the following entries should be considered:
Number on list 3

REACH - Candidate List of Substances of Very High Concern for Authorisation (Article 59). : Not applicable

REACH - List of substances subject to authorisation (Annex XIV) : Not applicable

Regulation (EC) No 1005/2009 on substances that deplete the ozone layer : Not applicable

Regulation (EU) 2019/1021 on persistent organic pollutants (recast) : Not applicable

Regulation (EC) No 649/2012 of the European Parliament and the Council concerning the export and import of dangerous chemicals : Not applicable

Seveso III: Directive 2012/18/EU of the European Parliament and of the Council on the control of major-accident hazards involving dangerous substances. P6b SELF-REACTIVE SUBSTANCES AND MIXTURES and ORGANIC PEROXIDES

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
DSL : YES. All components of this product are on the Canadian DSL
ENCS : YES. On the inventory, or 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.

15.2 Chemical safety assessment

Methyl ethyl ketone peroxide;Reaction mass of butane-2,2-diyl : A Chemical Safety Assessment has been carried out for this substance.

dihydroperoxide and di-sec-butylhexaoxidane
Diethylene glycol

: A Chemical Safety Assessment has been carried out for this substance.

SECTION 16: OTHER INFORMATION

Full text of H-Statements referred to under sections 2 and 3.

H225	: Highly flammable liquid and vapour.
H240	: Heating may cause an explosion.
H242	: Heating may cause a fire.
H302	: Harmful if swallowed.
H314	: Causes severe skin burns and eye damage.
H318	: Causes serious eye damage.
H319	: Causes serious eye irritation.
H332	: Harmful if inhaled.
H336	: May cause drowsiness or dizziness.

Classification procedure:

Organic peroxides, D, H242, Based on product data or assessment
Acute toxicity, 4, H302, Based on product data or assessment
Acute toxicity, 4, H332, Based on product data or assessment
Skin corrosion, 1B, H314, Calculation method
Serious eye damage, 1, H318, Calculation method

Full text of other abbreviations

2000/39/EC	: Europe. Commission Directive 2000/39/EC establishing a first list of indicative occupational exposure limit values
2006/15/EC	: Europe. Indicative occupational exposure limit values
2017/164/EU	: Europe. Commission Directive 2017/164/EU establishing a fourth list of indicative occupational exposure limit values
ACGIH	: USA. ACGIH Threshold Limit Values (TLV)
AT OEL	: Austria. Limit values regulation - Annex I: Substance list
2000/39/EC / TWA	: Limit Value - eight hours
2000/39/EC / STEL	: Short term exposure limit
2006/15/EC / TWA	: Limit Value - eight hours
2017/164/EU / STEL	: Short term exposure limit
2017/164/EU / TWA	: Limit Value - eight hours
ACGIH / TWA	: 8-hour, time-weighted average
ACGIH / STEL	: Short-term exposure limit
AT OEL / MAK-TMW	: Time Weighted Average
AT OEL / MAK-KZW	: Short Term Exposure Limit

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - European 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 -

BUTANOX HBO-50

Version 3

Revision Date 27.08.2021

Print Date 08.08.2023

AT / EN

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; TRGS - Technical Rule for Hazardous Substances; TSCA - Toxic Substances Control Act (United States); UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative

Further information

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.