# SAFETY DATA SHEET

Date of update: 03.08.2016 Version: 3.0/EN

[In accordance with the criteria of Regulation No 1907/2006 (REACH) as amended]

## Section 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

| | |
|---|---|
| Trade name: | **METOX-50** |
| Substance name: | reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane [MEKP], solution 35% |
| ECHA number: | 700-954-4 |
| Registration number: | 01-2119514691-43-0004 |
| Synonym: | 2-butanone peroxide |

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

| | |
|---|---|
| Relevant identified uses: | Manufacturing of the substance; Formulation of preparations; Industrial use of reactive processing aids; Industrial use of chemicals for polymer processing. |
| Uses advised against: | not determined. |

### 1.3 Details of the supplier of the safety data sheet

| | |
|---|---|
| Manufacturer: | **Oxytop Sp. z o.o.** |
| Address: | Antoninek 2, 62-060 Stęszew, Polska |
| Telephone/Fax number: | +48 61 898 53 00, 48 61 898 53 01 |

E-mail address for a competent person responsible for sds: biuro@theta-doradztwo.pl, dokumentacja@oxytop.pl

### 1.4 Emergency telephone number

112 (emergency telephone number),

## Section 2: Hazards identification

### 2.1 Classification of the substance or mixture

**Org. Perox. D H242, Acute Tox. 4 H302, Acute Tox. 4 H332, Skin Corr. 1B H314, Eye Dam. 1 H318**

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

### 2.2 Label elements

Hazard pictograms and signal words

**DANGER**

Hazard statements

| | |
|---|---|
| H242 | Heating may cause a fire. |
| H302 | Harmful if swallowed. |
| H314 | Causes severe skin burns and eye damage. |
| H332 | Harmful if inhaled. |

Precautionary statements

| | |
|---|---|
| P102 | Keep out of reach of children. |
| P210 | Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. |
| P280 | Wear protective gloves/protective clothing/eye protection/face protection. |
| P301+P310 | IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. |
| P303+P361+P353 | IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. |
| P305+P351+P338 | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |

### 2.3 Other hazards

The substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH. **WARNING!** Due to the explosive properties of the substance, do not remove the stabilizer from the substance - explosion hazard.

## Section 3: Composition/information on ingredients

### 3.1 Substances

MEKP is a multi-constituent substance consisting of the two main components sec-butylidene hydroperoxide (CAS 2625-67-4, EC 220-091-2, "Monomer") and dioxybis(1-methylpropylidene) hydroperoxide (CAS 126-76-1, EC 204-802-3, "Dimer"). Stabilizer: dimethyl phthalate.

**Main components**

| | |
|---|---|
| Name: | sec-butylidene hydroperoxide |
| CAS number: | 2625-67-4 |
| EC number: | 220-091-2 |
| Concentration: | 20-25% |
| Name: | dioxybis(1-methylpropylidene) hydroperoxide |
| CAS number: | 126- 76-1 |
| EC number: | 204-802-3 |
| Concentration: | 9-14% |

**Additive (stabilizer)**

| | |
|---|---|
| Name: | dimethyl phthalate |
| CAS number: | 131-11-3 |
| EC number: | 205-011-6 |
| Concentration: | 56-61% |

## Section 4: First aid measures

### 4.1 Description of first aid measures

Skin contact: Take off contaminated clothing. Wash the contaminated skin thoroughly with plenty of water. Do not use solvents and solutions. Wear sterile dressing. Immediately consult a doctor.

Eye contact: Wash the contaminated eye with plenty of water for 10-15 minutes. Protect the non-irritated eye, remove contact lenses. Avoid powerful water stream – risk of cornea damage. Wear sterile dressing. Immediately consult a doctor.

Ingestion: Do not induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious person. Consult a doctor immediately, show the container or label.

Inhalation: Move the victim to fresh air. Keep victim warm and calm. Consult a doctor if disturbing symptoms appear.

### 4.2 Most import ant symptoms and effects, both acute and delayed

Eye contact: may cause irritation, redness, pain, vision dificulties, corneal damage, serious eye damage.
Skin contact: may cause irritation, redness, severe skin burns.
Ingestion: ulcers, burns, risk of perforation of the upper digestive tract can occur.
Inhalation: headaches and dizziness, respiratory tract irritation.

### 4.3 Indication of any immediate medical attention and special treatment needed

Physician makes a decision regarding further medical treatment after thoroughly examination of the injured. Symptomatic treatment.

## Section 5: Firefighting measures

**5.1 Extinguishing media**

Suitable extinguishing media: foam, dry chemicals, carbon dioxide, water spray, sand.

Unsuitable extinguishing media: halons, water jet – risk of the propagation of the flame.

**5.2 Special hazards arising from the substance or mixture**

Heating may cause a fire. The product burns very rapidly. There is a risk of re-ignition. Product vapors may form dangerous explosive mixtures with air. As a result of thermal decomposition, combustible materials may be created: ethane, methane, ethylene, and highly reactive free radicals. During the fire, the product may produce harmful fumes of carbon oxides and other unidentified products of pyrolysis. Do not inhale combustion products, they can be dangerous for human health.

**5.3 Advice for firefighters**

Personal protection typical in case of fire. Do not stay in the fire zone without self-contained breathing apparatus and protective clothing resistant to chemicals. Cool the endangered containers with water spray from a safe distance (ca. 15 m) and remove them from the danger zone if it is safe and possible to do. Collect used extinguishing agents.

## Section 6: Accidental release measures

**6.1 Personal precautions, protective equipment and emergency procedures**

Limit the access for the outsiders into the breakdown area, until the suitable cleaning operations are completed. Ensure that only the trained personnel removes the effects of the accident. In case of large spills, isolate the exposed area. Avoid skin and eyes contamination. Ensure adequate ventilation. Do not inhale vapours. Remove all ignition sources. Do not smoke. Do not use sparking tools.

**6.2 Environmental precautions**

In case of release of large amounts of the product, it is necessary to take appropriate steps to prevent it from spreading into the environment. Notify relevant emergency services.

**6.3 Methods and material for containment and cleaning up**

Place the damaged container in emergency container. Collect with liquid absorbing materials (e.g. soil, sand). In case of a large leakage, pump it out. Place it in labeled containers for waste. Waste should be ept wet. Do not close the containers. Clean the contaminated place and ventilate it.

**6.4 Reference to other sections**

Appropriate conduct with waste product – section 13. Personal protective equipment – see section 8.

## Section 7: Handling and storage

**7.1 Precautions for safe handling**

Handle in accordance with good occupational hygiene and safety practices. Do not eat, drink or smoke when using the product. Before break and after work wash hands. Avoid contact with skin and eyes. Use personal protection equipment. Ensure adequate ventilation of area, where the product is used. Do not inhale vapours and spray. Remove all ignition sources – do not use open flame, do not smoke, use sparking tools and clothing made with fibers susceptible to static electrification. Protect tanks from heat, install explosion-proof electrical equipment, tanks should be bridged and grounded. In the workplace, use only the amount of the product that is absolutely necessary for the job. Keep the unused containers tightly closed. Never mix peroxides directly with accelerators (risk of explosion) – add each component separately to the resin. Do not re-use empty containers.

### 7.2 Conditions for safe storage, including any incompatibilities

Keep only in original containers in dry, cool and well-ventilated area in the warehouse or any part of thereof that is designed for storing peroxides and that corresponds to regulations in force in the field of security and fire protection - fireproof storage, explosion-proof electrical installation and ventilation, the floor with electro-conductive flooring. Metal devices and storage equipment, containers, packaging, etc. on which the electrical charges can be accumulated, should be grounded. Keep away from heat and ignition sources. Avoid direct sunlight. Do not smoke. Protect the containers from contamination. Never pour back the substance into the original container from which it was taken (risk of decomposition). Keep away from incompatible materials (see section 10), foodstuffs and animal feed. Temperature recommended for storage: <25°C (to maintain the technical characteristics of the substance). Use package made of stainless steel, polyethylene (HDPE), Teflon (PTFE). Do not store in containers made of: metals (including steel), copper, rubber (natural or synthetic), stoneware.

### 7.3 Specific end use(s)

See exposure scenarios.

## Section 8: Exposure controls/personal protection

### 8.1 Control parameters

Product does not contain any components with occupational exposure limit values at working place.

Please check any national occupational exposure limit values in your country.

Legal basis: Commission Directives 2006/15/EC, 2000/39/EC, 2009/161/EC .

DNEL values for workers:

| Type of effect | Route | DNEL |
|---|---|---|
| Acute – systematic effects | Inhalation | 15,864 mg/m$^3$ |
| Long-term – systematic effects | Inhalation | 5,288 mg/m$^3$ |
| Long-term – systematic effects | Dermal | 3 mg/kg bw |

DNEL values for general population:

| Type of effect | Route | DNEL |
|---|---|---|
| Long-term - systematic effects | Inhalation | 1,125 mg/m$^3$ |
| Long-term – systematic effects | Dermal | 1,5 mg/kg bw |
| Long-term – systematic effects | Oral | 0,75 mg/kg bw |

PNEC values

| PNEC | Value | Assesment factor |
|---|---|---|
| **Fresh water** | 0.0056 mg/l | 1000 |
| **Marine water** | 0.00056 mg/l | 10000 |
| **Water (intermittent release)** | 0.056 mg/l | 100 |
| **Sediment (fresh water)** | 0,0876 mg/kg | - |
| **Sediment (marine water)** | 0,00876 mg/kg | - |
| **Soil** | 0,0142 mg/kg | - |
| **STP** | 1,2 mg/l | 10 |

**8.2 Exposure controls**

Use the product in accordance with good occupational hygiene and safety practices. Do not eat, drink or smoke when using the product. Before break and after work wash hands carefully. Avoid contact with skin and eyes. Do not inhale vapours. Keep away from heat, hot surfaces, sparks, open flames and other sources of ignition. Do not smoke. If, during the work process there is a danger of spilling corrosive liquids on workers or a risk of inflammation of their garments – safety showers (to wash a whole body) and separate eyewash stations should be installed no further than 20 meters in horizontal line from the posts on which the processes are carried out. Ventilation and electrical installation should be explosion-proof. General ventilation and / or local exhaust is recommended in order to maintain the concentration of vapors below dangerous values. Local exhaust is recommended, because it enables to control the emissions at source and prevents from spreading to the whole working area.

Hand protection

Wear protective gloves, resistant to the product. Material recommended for gloves: PCV, neoprene. In case of a short contact, use protective gloves with effectiveness level ≥ 2 (breakthrough time > 30 min.). In case of a prolonged contact, use protective gloves with effectiveness level = 6 (breakthrough time > 480 min.).

The material that the gloves are made of must be impenetrable and resistant to the product's effects. The selection of material must be performed with consideration of breakthrough time, penetration speed and degradation. Moreover, the selection of proper gloves depends not only on the material, but also on other quality features and changes depending on the manufacturer. The producer should provide detailed information regarding the exact breakthrough time. This information should be followed.

Body protection

Wear protective clothing type 3, 4 or 6 to protect against liquid chemicals (selection should be made taking into account the way of exposure to chemical agent):

- protective clothing against liquid jet - type 3;
- protective clothing against liquid spray - type 4;
- clothing that protects against liquid splashes - type 6.

Eyes protection

Use tightly fitting protective glasses if there is a risk of eye contamination.

Respiratory protection

In case of the formation of vapours and aerosols, use absorbing equipment or absorbing and filtering equipment with a suitable protection class (class 1/protection against gases or vapours with a concentration in the air volume not exceeding 0.1%, class 2 / protection against gases or vapours with a concentration in the air not exceeding 0.5%, class 3 / protect against gases or vapours at concentrations in the air volume to 1%). In cases where the oxygen concentration is ≤ 17% and / or maximum concentration of toxic substances in the air is ≥ 1.0% by volume, isolating equipment should be used.

Applied personal protective equipment must comply with the requirements of the Directive 89/686/EC. The employer is obliged to provide protective equipment relevant to performed activities and in accordance with all quality requirements, including its maintenance and cleaning.

Environmental exposure controls

Do not allow large quantities of the product to contaminate ground water, canalization, sewages or soil.

## Section 9: Physical and chemical properties

**9.1 Information on basic physical and chemical properties**

| | |
|---|---|
| physical state: | liquid |
| colour: | colorless |
| odour: | characteristic |
| odour threshold: | not determined |
| pH (20°C): | 3,5-5,0 |
| melting point/freezing point: | -6- to -55°C |

| | | |
|---|---|---|
| initial boiling point and boiling range: | > 95°C | |
| flash point: | 84°C | (method: ISO 3679, closed cup)* |
| evaporation rate: | not determined | |
| flammability (solid, gas): | not applicable | |
| upper/lower flammability or explosive limits: | not determined | |
| vapour pressure (25°C): | 0.184 - 73.6 Pa | (method: calculated)* |
| vapour density: | not determined | |
| density (20°C): | 1,169 - 1,175 g/cm$^3$ | |
| solubility(ies): | insoluble in water | |
| partition coefficient: n-octanol/water (25°C): | 2,04 (dimer) | |
| | <0,3 (monomer) | (method: A8 according to reg. 440/2008/EC as amended)* |
| auto-ignition temperature: | not determined | |
| decomposition temperature: | 60°C (Self-Accerelating Decomposition Temperature)* | |
| explosive properties: | not display | |
| oxidising properties: | not display | |
| dynamic viscosity (20°C): | 13,1 mPas | (Ubbelohde viscosimeter)* |

**9.2 Other information**

None.

*Data for MEKP in TXIB (stabilizer).

## Section 10: Stability and reactivity

**10.1 Reactivity**

Reactive product. See also subsection 10.4-10.5.

**10.2 Chemical stability**

The product is stable under normal conditions of use and storage (appropriate stabilizers).

**10.3 Possibility of hazardous reactions**

None.

**10.4 Conditions to avoid**

Avoid heat sources, temperature >25°C, direct exposure to sunlight and flame sources – risk of exotermic decomposition.

**10.5 Incompatible materials**

Keep away from strong oxidizers, strong acids and basis, Sulphur compounds, salts of transition metals, rust, dust (risk of self-accelerating exothermic decomposition), accelerators (amines, metal salts), acetone.

**10.6 Hazardous decomposition products**

MEKP undergoes a rapid hydrolytic degradation and form acetic acid, ethyl acetate, methyl ethyl ketone.

## Section 11: Toxicological information

**11.1 Information on toxicological effects**

Acute toxicity

| | |
|---|---|
| $LD_{50}$ (rat, oral) | 1 017 mg/kg (method: OECD 401) |
| $LD_{50}$ (rabbit, dermal) | 4 000 mg/kg (method: OECD 402) |
| $LC_{50}$ (rat, inhalation) | 200 ppm/4h |
| $LC_{50}$ (rat, inhalation) | 17000 mg/m$^3$ (method: OECD 403) |

Harmful if swallowed. Harmful if inhaled.

Skin corrosion/irritation

MEKP was tested for irritating / corrosive properties to skin on rabbits, in accordance with method B.4 according to reg. 440/2008/EC as amended. The results showed that MEKP is corrosive to the skin.

Serious eye damage/irritation

MEKP was tested for irritating / corrosive properties to eyes on rabbits. The results showed that MEKP is corrosive to the eyes - causes serious eye damage.

Respiratory or skin sensitisation

The substance is not sensitizing (method OECD 406 and B6 according to reg. 440/2008/EC as amended. Material: guinea pig).

Germ cell mutagenicity

The substance is not classified as mutagenic according to in vitro and in vivo tests.

Carcinogenicity

No carcinogenicity study is available for MEKP. In accordance with column 2 of REACH Annex X, a carcinogenicity study (required in section 8.9.1) does not need to be conducted as methyl-ethylketone peroxide did not reveal indication for mutagenic/genotoxic effects in a complete battery set in vitro and in some in vivo mutagenicity tests. In addition, there is no evidence from the repeated dose studies that the substance can induce hyperplasia and /or pre-neoplastic lesions.

Reproductive toxicity

| | |
|---|---|
| NOAEL(rat) | 50 mg/kg bw/day for systemic toxicity to the parental (method: OECD 421) |
| NOAEL(rat) | 75 mg/kg bw/day for reproductive toxicity (method: OECD 421) |
| NOAEL(rat) | 50 mg/kg bw/day toxicity newborn (method: OECD 421) |

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

STOT-single exposure

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

STOT-repeated exposure

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

Aspiration hazard

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

## Section 12: Ecological information

### 12.1 Toxicity

The substance is not classified as dangerous for environment.

| | |
|---|---|
| Toxicity for fish $LC_{50}$ | 44,2 mg/l/72h/*Poecilia reticulata* (method: OECD 201 and C1 according to reg. 440/2008/CE as amended). |
| Toxicity for invertebrates $LC_{50}$ | 39 mg/l/42h/*Daphnia magna* (method: OECD 202 and C2 according to reg. 440/2008/CE as amended). |
| Toxicity for algae $LC_{50}$ | 3,2 mg/l/72h/*Pseudokirchnerella subcapitata,* biomass (method: OECD 203 and C3 according to reg. 440/2008/CE as amended). |
| Toxicity for algae $LC_{50}$ | 5,6 mg/l/72h/*Pseudokirchnerella subcapitata*, growth rate (method: OECD 203 and C3 according to reg. 440/2008/CE as amended). |

### 12.2 Persistence and degradability

Substance is readily biodegradable (method: OECD 301B and 301D).

### 12.3 Bioaccumulative potential

Bioaccumulation is not expected. Determination of bioaccumulation for MEKP in aquatic species was scientifically unjustified and therefore was not required in accordance with section 9.3.2, column 2 of Annex IX of REACH regulation.

The coefficients of bioaccumulation (BCF) of MEKP were calculated at 10,3 l/kg or log BCF 1,013 with program EPIWIN. Due to its low coefficient of bioaccumulation, MEKP has been recognized as a substance without the accumulation potential, and the direct and indirect exposure of the aquatic environment is highly unlikely. The log Pow MEKP estimated is as <2,04. In addition, the representative BCF decomposition products of MEKP showed no tendency to bioaccumulate.

**12.4 Mobility in soil**

The substance is not mobile in the soil. MEKP has a low partition coefficient n-octanol/water logPow and partition coefficient water / soil log Koc.

**12.5 Results of PBT and vPvB assessment**

The substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII of REACH.

**12.6 Other adverse effects**

The substance has no influence on global warming and destruction of the ozone layer.

## Section 13: Disposal considerations

**13.1 Waste treatment methods**

Disposal methods for the product: disposal in accordance with the local legislation. Waste code should be given in the place of waste formation. Classify as dangerous waste.

Disposal methods for used packing: eliminate empty containers in accordance with the legislation in force.

Legal basis: Directive 2008/98/EC, 94/62/EC.

## Section 14: Transport information

**14.1 UN number**

UN 3105

**14.2 UN proper shipping name**

ORGANIC PEROXIDE TYPE D, LIQUID [reaction mass of butane-2,2-diyl dihydroperoxide and di-sec-butylhexaoxidane]

**14.3 Transport hazard class(es)**

5.2


**14.4 Packing group**

Not apllicable.

**14.5 Environmental hazards**

The substance is not classified as dangerous for environment according to transport regulations.

**14.6 Special precautions for user**

Avoid heat, hot surfaces, sparks, open flames and other sources of ignition. Do not smoke.

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

Not apllicable.

## Section 15: Regulatory information

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

**Regulation (EC) No 1907/2006** of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC as amended.

**Regulation (EC) No 1272/2008** of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 as amended.
**Commission Regulation (EU) No 2015/80** of 28 May 2015 amending Regulation (EC) No 1907/2006 of the European Parliament and of the Council on the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).
**Directive 2008/98/EC** of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives.
**European Parliament and Council Directive 94/62/EC** of 20 December 1994 on packaging and packaging waste.

### 15.2 Chemical safety assessment

A Chemical Safety Assessment was performed.

## Section 16: Other information

Clarification of aberrations and acronyms

| | |
|---|---|
| Org. Perox. D | Organic peroxide type D |
| Acute Tox. 4 | Acute toxicity, cat. 4 |
| Skin Corr. 1B | Skin Corrosion, cat. 1B |
| Eye Dam. 1 | Eye damage, cat 1 |
| PBT | Persistent, Bioaccumulative and Toxic substance |
| vPvB | very Persistent, very Bioaccumulative substance |

Trainings

Before commencing working with the product, the user should learn the Health & Safety regulations, regarding handling chemicals, and in particular, undergo a proper workplace training.
People associated with transport of hazardous materials in accordance with ADR should be adequately trained for their job responsibilities (general training, bench and safety).

Key literature references and data sources

Safety data sheet was drawn up on the basis provided by the distributor sheet, literature, online databases (e.g. ECHA, TOXNET, Cosing) as well as knowledge and experience, taking into account the current legislation.

Other data

| | |
|---|---|
| Modifications: | sections: 1-16 |
| Composed by: | mgr Anna Królak (on the basis of polish msds, version 3.0). |
| Safety Data Sheet made by: | **„Theta"** Doradztwo Techniczne |

**This Safety Data Sheet cancels and updates all its previous versions.**

The information contained herein is based on our current knowledge and are derived from data contained in the Chemical Safety Report (CSR). The above information is believed to be correct, but may not be sufficient and should be treated only as an aid to safety in transport, distribution, use and storage of the product. The safety data sheet does not relieve you of the knowledge of the rules on the use of the product. The recipient is responsible for safeguards staff and surroundings at the time of use of the substance. This product should be stored, transported and used in accordance with good industrial hygiene practices and in compliance with all laws.