

**SAFETY DATA SHEET**

Revision date: December 2010

According to Regulation (EC) No. 1907/2006
and Regulation (EC) No. 453/2010

Revision Number: 5

HYDROGEN PEROXIDE, <50 %**1. IDENTIFICATION OF THE SUBSTANCE/ MIXTURE AND OF THE COMPANY/ UNDERTAKING****1.1 Product identifier**

Trade name: Hydrogen peroxide, <50 %
Chemical name: Hydrogen peroxide (H₂O₂)
REACH registration No.: 01-2119485845-22-0001

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

Chemical basic material. Reserved for industrial and professional use.

Identified uses:

1. Chemical industry – manufacture, professional and industrial use
2. Bleaching agents (hair bleaching and dyeing and tooth bleaching)
3. Environmental and agricultural (water treatment)
4. Cleaning agents
5. Electronic industry
6. Metal treatment
7. Oxidising agents
8. Textile industry
9. Pulp and paper

1.3 Details of the supplier of the safety data sheet

Company name: Belinka Perkemija d.o.o.
Street/POB-No.: Zasavska cesta 95
State/city/postal code: 1231 Ljubljana - Crnuce
Telephone: +386 1 5886 299
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Dept. responsible for information:
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1.4 Emergency telephone number

Telephone: +386 1 5886 299

2. HAZARDS IDENTIFICATION**2.1 Classification of the substance or mixture****Classification according to EC Regulation 1272/2008 (CLP)**

Eye damage 1; H318 Causes serious eye damage.
STOT SE. 3; H335 May cause respiratory irritation.
Skin irritant2; H315 Causes skin irritation
Acute Tox. 4* H302 Harmful if swallowed.

Classification according to directive 67/548/EEC:

Xi; Irritant R41 Risk of serious damage to eyes
Xi; Irritant R37/38 Irritating to respiratory system and skin
Xn; Harmful R22 Harmful if swallowed

2.2 Label elements

Labelling (CLP)



Signal word

Danger

Hazard Statements

H318 Causes serious eye damage.
 H335 May cause respiratory irritation.
 H315 Causes skin irritation
 H302 Harmful if swallowed.

Safety precautions

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
 P302+P352 IF ON SKIN: Wash with plenty of soap and water.
 P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
 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

No risks worthy of mention.

3. COMPOSITION/ INFORMATION ON INGREDIENTS

3.1 Substance

Substance name and formula	Concentration	EC No.	CAS No.	Index No.	REACH Registr. No
Hydrogen peroxide (H ₂ O ₂)	< 50%	231-765-0	7722-84-1	008-003-00-9	01-2119485845-22
Water, H ₂ O	differ.	231-791-2	7732-18-5	/	/

Product line (customs classification): 2847 – Hydrogen Peroxide

3.2. Hazardous components - According to Regulation (EC) 1272/2008, as amended

Chemical name and formula	Hazard class and category	Route of exposure	H phrases
Hydrogen peroxide	Ox. Liq. 1	/	H271
	Acute Tox. 4	Inhalation	H332
	Acute Tox. 4	Oral	H302
	Skin Corr. 1A	/	H314
	Serious. eye dam. 1	/	H318
	Target organ – Syst. Tox. 3	Inhalation	H335

See chapter 16 for text of H phrases!

3.3. Hazardous components - European Directive 67/548/EEC or 1999/45/EC, as amended

Chemical name and formula	Classification	Hazard category	R phrases
Hydrogen peroxide			R5
	O	Oxidising	R8
	C	Corrosive	R35
	Xn	Harmful	R20/22

4. FIRST-AID MEASURES**4.1 Description of first aid measures**

- General information: Move out of dangerous area. Treat the eyes first. Keep the injured warm. Personal protective equipment for rescuers. In emergency situations call a physician immediately.
- After inhalation: Move victim to fresh air, put at rest and loosen restrictive clothing. Seek medical aid in case of troubles.
- In case of skin contact: Change contaminated clothing. Wash with plenty of water. Consult physician.
- After eye contact: Immediately flush eyes with plenty of flowing water for 10 to 15 minutes holding eyelids apart. Subsequently consult an ophthalmologist.
- After swallowing: Rinse mouth immediately and drink plenty of water.
Do NOT induce vomiting. Consult physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

- Inhalation: Inhalation of vapours is irritating to the respiratory system, may cause throat pain and cough. Risk of: Nose bleeding, chronic bronchitis
- Skin contact: Irritation Risk of: Burn
- Eye contact: Severe eye irritation Risk of serious damage to eyes.
Symptoms: Redness, Lachrymation, Swelling of tissue
- Ingestion: Severe irritation
Symptoms: Nausea, Abdominal pain, Vomiting, Diarrhoea, Risk of chemical pneumonitis from product inhalation.

4.3 Indication of any immediate medical attention and special treatment needed

No special measures are required.

5. FIRE-FIGHTING MEASURES**5.1 Extinguishing media**

- Suitable extinguishing media: water fog, foam, extinguishing powder, carbon dioxide
- Not to be used: Dry chemicals, organic compounds

5.2 Special hazards arising from the substance or mixture

Oxygen released in thermal decomposition may support combustion
Contact with combustible material may cause fire.
Contact with flammables may cause fire or explosions.
Risk of explosion if heated under confinement.

5.3 Advice for firefighters

In the event of fire, wear self-contained breathing apparatus.
Use personal protective equipment.
Wear chemical resistant oversuit
Cool containers / tanks with water spray.

6. ACCIDENTAL RELEASE MEASURES**6.1 Personal precautions, protective equipment and emergency procedures****Advice for non-emergency personnel**

Prevent further leakage or spillage if safe to do so.
Keep away from Incompatible products.

Advice for emergency responders

Evacuate personnel to safe areas.
Keep people away from and upwind of spill/leak.
Use personal protective equipment.

6.2 Environmental precautions

Dilute with plenty of water. In the event of a larger spill, notify the appropriate authorities.

6.3 Methods and material for containment and cleaning up

Dam up.
Do not mix waste streams during collection.
Soak up with inert absorbent material.
Keep in properly labelled containers.
Keep in suitable, closed containers for disposal.
Treat recovered material as described in the section "Disposal considerations".
Never return spills in original containers for re-use.

6.4 Reference to other sections

Refer to protective measures listed in sections 7 and 8.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Use only in well-ventilated areas.
Use only clean and dry utensils.
Never return unused material to storage receptacle.
Keep away from Incompatible products.
Keep away from heat.

7.2 Conditions for safe storage, including any incompatibilities

Storage

Keep only in the original container.
Store in a receptacle equipped with a vent.
Store in a well-ventilated place. Keep cool.
Keep container closed.
Keep in a banded area.
Keep away from Incompatible products.
Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
Regularly check the condition and temperature of the containers.
Electrical equipment should be protected to the appropriate standard.

Packaging material (*Suitable material*)

Aluminium 99,5 %
Stainless steel 304L / 316L
Approved grades of HDPE.

7.3 Specific end use(s)

For further information, please contact: Supplier

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

All exposure relevant information (human health and environment) is summarised in annex to this safety data sheet.

8.1 Control parameters

Exposure Limit Values: **Hydrogen peroxide**
UK. EH40 Workplace Exposure Limits (WELs) 2007
time weighted average = 1 ppm
time weighted average = 1.4 mg/m³
UK. EH40 Workplace Exposure Limits (WELs) 2007

Short term exposure limit = 2 ppm
Short term exposure limit = 2.8 mg/m³
US. ACGIH Threshold Limit Values 2009
time weighted average = 1 ppm

Other information on limit values:

Predicted No Effect Concentration (PNEC)

Marine water, 0.0126 mg/l

Fresh water, 0.0126 mg/l

Fresh water sediment, 0.0103 mg/kg

Soil, 0.0023 mg/kg

Derived No Effect Level / Derived minimal effect level (DNEL)

Workers, Inhalation, Acute effects, 3 mg/m³

Workers, Inhalation, Prolonged exposure, Local effects, 1.4 mg/m³

8.2 Exposure controls

Appropriate engineering controls

Ensure adequate ventilation.

Apply technical measures to comply with the occupational exposure limits.

Individual protection measures:

Respiratory protection: In case of insufficient ventilation, wear suitable respiratory equipment.
When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.
Recommended Filter type: NO, P3

Hand protection: Impervious gloves
Suitable material: PVC, Natural Rubber, butyl-rubber, Nitrile rubber
Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

Eye protection: Chemical resistant goggles must be worn.
If splashes are likely to occur, wear: Tightly fitting safety goggles, Face-shield

Skin and body protection: Chemical resistant apron
Suitable material
PVC
Natural Rubber
If splashes are likely to occur, wear: Apron, Boots

Hygiene measures: Eye wash bottles or eye wash stations in compliance with applicable standards.
Take off contaminated clothing and shoes immediately.
Wash contaminated clothing before re-use.
When using do not eat, drink or smoke.
Wash hands before breaks and at the end of workday.
Handle in accordance with good industrial hygiene and safety practice.

Environmental exposure controls

All information for relevant exposure scenarios including operational conditions and risk management measures are listed in 'Annex_I_eSDS_H₂O₂'.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 information on basic physical and chemical properties

Appearance: Clear, liquid
Colour: colourless
Odour: pungent

Data relevant to health, safety and environment:

Solubility in water: 100 %

Decomposition temperature:

≥ 60 °C

Vapour density (air = 1) 1,15

pH (20 °C) 1-4 (measured directly)

pKa (25 °C) 11.62

Flash point: inflammable

Autoignition temperature: non-combustible

Lower explosion limit: n.a.; danger of explosion in mixtures with explosive substances

Concentration H ₂ O ₂ , wt %	30	35	50	60
Melting point, °C	-26	-33	-52	-56
Boiling point, °C	106	108	114	119
Specific gravity (H ₂ O=1)	1,111	1,132	1,196	1,241
Vapour pressure (20 °C), Pa	1800	1650	1300	1056
Viscosity (20 °C), mPas	1,08	1,1	1,17	1,21

9.2 Other information

Molecular weight: 34 g/mol

Surface tension (20 °C) 75.6 mN/m

10. STABILITY AND REACTIVITY

10.1 Reactivity

Decomposes on heating
Potential for exothermic hazard

10.2 Chemical stability

Stable under recommended storage conditions
Decomposition becomes self-sustained at temperatures exceeding 141 °C.

10.3 Possibility of hazardous reactions

Contact with combustible material may cause fire.
Contact with flammables may cause fire or explosions.
Risk of explosion if heated under confinement.
Fire or intense heat may cause violent rupture of packages.

10.4 Conditions to avoid

Contamination
To avoid thermal decomposition, do not overheat.

10.5 Incompatible materials

Acids, Bases, Metals, Heavy metal salts, Powdered metal salts, Reducing agents,
Organic materials, Flammable materials

10.6 Hazardous decomposition products

Oxygen.

11. TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Acute toxicity:

Acute oral toxicity: LD50, rat, 1,193 - 1,270 mg/kg

Acute inhalation toxicity: LC50, rat, > 0.17 mg/l

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

Irritation (other route): Inhalation, Human experience, Irritating to respiratory system.(H₂O₂ 50 %)

Skin corrosion/irritation:

rabbit, Skin irritation

Serious eye damage/eye irritation:

Risk of serious damage to eyes.

Respiratory or skin sensitization:

Guinea pig, Did not cause sensitization on laboratory animals.

Mutagenicity:

In vitro tests have shown mutagenic effects.

Animal testing did not show any mutagenic effects.

Not classified due to inconclusive data.

Carcinogenicity:

Oral,

Prolonged exposure, mouse, Target Organs: duodenum, carcinogenic effects

Dermal,

Prolonged exposure, mouse, Animal testing did not show any carcinogenic effects.

Inhalation,

Prolonged exposure, mouse, Animal testing did not show any carcinogenic effects.

Not classified due to inconclusive data.

Toxicity for reproduction:

Substance is totally biotransformed (metabolised).

Study scientifically unjustified

Repeated dose toxicity: Oral, Prolonged exposure , mouse, Gastrointestinal tract 300 ppm(m), LOAEL

Oral, Prolonged exposure , mouse, 100 ppm , NOAEL

Inhalation, Repeated exposure , rat, Respiratory system >= 10 ppm(m), LOAEL

Inhalation, Prolonged exposure , rat, 2 ppm , NOAEL

12. ECOLOGICAL INFORMATION**12.1 Toxicity**

Fishes, Pimephales promelas, LC50, 96 h, 16.4 mg/l

Fishes, Pimephales promelas, NOEC, 96 h, 4.3 mg/l

Crustaceans, Daphnia magna, EC50, 48 h, 2.4 mg/l, fresh water, semi-static test

Crustaceans, Daphnia magna, NOEC, 48 h, 1 mg/l, fresh water, semi-static test

Algae, Skeletonema costatum, EC50, growth rate, 72 h, 1.38 mg/l

Algae, Skeletonema costatum, NOEC, 72 h, 0.63 mg/l

Algae, Chlorella vulgaris, EC50, Growth rate, 72 h, 4.3 mg/l

Algae, Chlorella vulgaris, NOEC, 72 h, 0.1 mg/l

12.2. Persistence and degradability**Abiotic degradation:**

Air, indirect photo-oxidation, t 1/2 24 h Conditions: sensitizer: OH radicals

Water, redox reaction, t 1/2 120 h Conditions: mineral and enzymatic catalysis, fresh water, salt water

Soil, redox reaction, t 1/2 12 h Conditions: mineral and enzymatic catalysis

Biodegradation:

aerobic, t 1/2, < 2 min Conditions: biological treatment sludge Readily biodegradable.

aerobic, t 1/2, from 0.3 - 5 d Conditions: fresh water Readily biodegradable.

anaerobic Conditions: Soil/sediments not applicable

12.3 Bioaccumulative potential

Bioaccumulative potential: log Pow -1.57

Result: Does not bioaccumulate.

12.4 Mobility

Water, considerable solubility and mobility

Soil/sediments, log KOC:0.2 non-significant evaporation and adsorption

Air, Volatility, Henry's law constant (H), = 0.75 Pa.m³/mol Conditions: 20 °C not significant

12.5 Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

12.6 Other adverse effects

No data available

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Waste disposal methods: Limited quantity.
Dilute with plenty of water.
Flush into sewer with plenty of water.
Maximum quantity
Contact manufacturer.
Contact waste disposal services.
In accordance with local and national regulations.

Contaminated packaging: Empty containers.
Clean container with water.
Dispose of rinse water in accordance with local and national regulations.
Where possible recycling is preferred to disposal or incineration.
In accordance with local and national regulations.

14. TRANSPORT INFORMATION

14.1 UN number

ADR/RID, IMDG, IATA: 2014

14.2 UN proper shipping name

ADR/RID, IMDG, IATA: HYDROGEN PEROXIDE, AQUEOUS SOLUTION, with not less than 20% but not more than 60% hydrogen peroxide

14.3 Transport hazard class(es)

ADR/RID, IMDG, IATA: Class 5.1, Code: OC1

14.4 Packing group

ADR/RID, IMDG, IATA: II

14.5 Environmental hazards

Marine Pollutant NO

14.6 Special precautions for user



Land transport (ADR/RID)

Warning board: ADR/RID: 58/2014

Hazard label: 5.1+8

Limited quantities: 1 L

EQ: E2

Contaminated packaging: Instructions P504 IBC02 PP10

Contaminated packaging: Special provisions B5

Special provisions for packing together:

MP15

Portable tanks: Instructions T7

Portable tanks: Special provisions TP2, TP6, TP24

Tank coding: L4BV(+), TU3, TC2, TE8, TE11, TT1

Tunnel restriction code: (E)

Sea transport (IMDG)

EmS: F-H, S-Q
Special provisions: -
Limited quantities: 1 L
Contaminated packaging: Instructions P504, IBC02, PP10
Contaminated packaging: Provisions B5
IBC: Instructions IBC02
IBC: Provisions B5
Tank instructions: IMO -
Tank instructions: UN T7
Tank instructions: Provisions TP2, TP6, TP24

Stowage and segregation:

Category D. Shade from radiant heat. "Separated from" permanganates and class 4.1

Properties and observations:

Colourless liquid. Slowly decomposes, evolving oxygen. The rate of decomposition increases in contact with metals, except aluminium. In contact with combustible material may cause fire or explosion. Causes burns to skin, eyes and mucous membranes. Even though stabilized, these solutions may evolve oxygen.

Air transport (IATA); Prohibited!

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

No data available

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

- 1) Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended
- 2) Directive 1999/45/EC of the European Parliament and of the Council of 31 May 1999 concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations, as amended
- 3) 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, as amended
- 4) Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work, as amended
- 5) COUNCIL DIRECTIVE 96/82/EC on the control of major-accident hazards involving dangerous substances as amended
- 6) Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste
- 7) EH40/2005. Workplace Exposure Limits, as amended through 1,10, 2007 (WELs) Published by the Health and Safety Executive (HSE). Issued under the Control of Substances Hazardous to Health Regulations - as amended

15.2 Chemical Safety Assessment

For this substance a chemical safety assessment has been carried out.

16. OTHER INFORMATION**Further remarks****Full text of H-Statements referred to under section 2 and 3**

H271	May cause fire or explosion; strong oxidiser.
H272	May intensify fire; oxidiser.
H302	Harmful if swallowed.
H314	Causes severe skin burns and eye damage.
H315	Causes skin irritation
H318	Causes serious eye damage.
H332	Harmful if inhaled.
H335	May cause respiratory irritation.

Full text or risk phrases (R phrase) referred to under section 2 and 3

R5	Heating may cause an explosion
R8	Contact with combustible material may cause fire
R20/22	Harmful by inhalation and if swallowed
R35	Causes severe burns.
R37/38	Irritating to respiratory system and skin
R41	Risk of serious damage to eyes

Literature:

- 1) REACH Registration dossier for hydrogen peroxide, H₂O₂-REACH Consortium, 2010.
- 2) ECB (2003). EU Risk Assessment Report Hydrogen peroxide. 2nd Priority List, Volume 38. European Commission, Joint Research Centre.
- 3) Safety Data Sheet, Hydrogen peroxide, Belinka Perkemija d.o.o., Revision No. 4.

Group that issues data sheet

Contact person: see chapter 1, department responsible for information.

The information in this data sheet has been established to our best knowledge and was up-to-date at time of revision. It does not represent a guarantee for the properties of the product described in terms of the legal warranty regulations.