



SAFETY DATA SHEET

ACCORDING TO EC-REGULATIONS 2015/830 & 1272/2008 (CLP)

| REV | Description | Date | C.R. No. | Orig | Chkd | Apprd |
|-----|--|------------|----------|------|-----------|------------|
| 1 | First Issue | 01-05-2012 | | P.D | JS | YY |
| 2 | Update to H & P Statements | 21.02.13 | 2287 | CB | JC | YY |
| 3 | Storage temperature | 02.06.14 | 2653 | CB | SS | EB |
| 4 | Update to H & P statements | 02.06.16 | 3180 | CB | PB | CB |
| 5 | Update to H & P statements, remove R & S phrases | 25.10.16 | 3251 | JC | <i>es</i> | <i>Re.</i> |



SAFETY DATA SHEET

ACCORDING TO EC-REGULATIONS 2015/830 & 1272/2008 (CLP)

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

1.1 Product identifier

| | |
|-------------------|--------------------------------|
| Product Name | Bioquell HPV-AQ |
| Chemical Name | Hydrogen Peroxide Solution 35% |
| Molecular Formula | H ₂ O ₂ |
| Type of Product | Mixture |

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

| | |
|-------------------|---|
| Identified use(s) | To be used in conjunction only with Bioquell Hydrogen Peroxide Vapour Generating Equipment. Product is for professional use only |
|-------------------|---|

Details of the supplier of the Safety Data Sheet

1.3 Company Identification

| | |
|---------------------------|---|
| Address | Bioquell UK Limited 52 Royce Close West Portway Andover Hampshire SP10 3TS |
| Telephone | +44 (0) 1264 835 835 |
| Fax | +44 (0) 1264 835 836 |
| E-Mail (competent person) | |

For details of responsible persons within individual member states refer to: <http://www.bioquell.com/en-uk/contact/distributors/>

1.4 Emergency telephone number out of hours

| | |
|---|---|
| Emergency Phone No. during office hours | Europe 1-760-476-3961 use access code: 333809 +44 (0) 1264 835 835 (08.00 – 17.00 GMT Monday - Friday) |
|---|---|


2. SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 Regulation (EC) No. 1272/2008 (CLP)

Acute Tox. 4, Oral. H302, Inhalation H332
Skin Irrit. 2, H315
Serious Eye Dam. 1, H318
STOT SE 3. Inhalation. H335



| | |
|--|--|
| <p>2.2 Label elements</p> <p>2.2.1 Label elements</p> <p>Name(s) on Label</p> <p>Hazardous components</p> <p>Signal Word</p> | <p>According to Regulation (EC) No. 1272/2008 (CLP)</p> <p>Hydrogen peroxide (35%)</p> <p>DANGER</p> |
| <p>Hazard Pictogram</p> |  |
| <p>Hazard statement(s)</p> | <p>H302: Harmful if swallowed</p> <p>H315: Causes skin irritation</p> <p>H332: Harmful if inhaled</p> <p>H318: Causes serious eye damage</p> <p>H335: May cause respiratory irritation</p> |
| <p>Precautionary statement(s)</p> <p>Prevention</p> | <p>P261: Avoid breathing gas/mist/vapours/spray.</p> <p>P270: Do not eat, drink or smoke when using this product</p> <p>P280: Wear protective gloves/eye protection/face protection.</p> |
| <p>Response</p> | <p>P310: Immediately call a POISON CENTRE or doctor/physician</p> <p>P301 + P312 + P330: IF SWALLOWED: call a POISON CENTRE or doctor/physician if you feel unwell. Rinse mouth</p> <p>P302 + P352: IF ON SKIN: Wash with plenty of soap and water.</p> <p>P304 + P340: IF INHALED: Remove person to fresh air and keep at rest in a position comfortable for breathing</p> <p>P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> |
| <p>Disposal</p> | <p>P501: Dispose of contents / container in accordance with EWC160903, or applicable local regulations</p> |
| <p>2.3 Other hazards</p> | <p>None</p> |
| <p>2.4 Additional Information</p> | <p>None</p> |



3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Mixtures

3.1.1. Concentration

| Substance Name: | Concentration |
|--|---------------|
| Hydrogen peroxide solution | Ca. 35% |
| CAS-No.: 7722-84-1 / EC-No.:231-765-0 / Index-No.: 008-003-00-9 REACH Registration Number: 01-2119485845-22 | |

EC Classification No. 1272/2008

| Hazardous ingredient(s) | Hazard Class | Hazard Category | Route of exposure | H Phrases | Hazard pictogram(s) and Hazard statement(s) |
|---------------------------------------|--|-----------------|-------------------|-----------|---|
| Hydrogen peroxide solution 35% | Acute toxicity | Category 4 | Inhalation | H332 | Acute Tox. 4 (Inhalation), H332 Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Dam. 1, H318 STOT SE3, H335 |
| | Acute toxicity | Category 4 | Oral | H302 | |
| | Skin irritant | Category 2 | | H315 | |
| | Serious eye damage | Category 1 | | H318 | |
| | Specific target organ toxicity – single exposure | Category 3 | Inhalation | H335 | |

3.2 Additional Information

For full text of H/P phrases see sections 2 and 16.

4. SECTION 4: FIRST AID MEASURES



First aiders should refer to section 8 for appropriate PPE

4.1 Description of first aid measures

If inhaled

Move the exposed person to fresh air immediately. If person is not breathing, contact emergency medical services, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison centre or doctor for further treatment advice.

In case of skin contact

Wash with plenty of water and soap.
Remove and wash contaminated clothing before re-use.
If symptoms persist seek immediate medical attention.



In case of eye contact

Seek immediate medical attention.
Eyes should be washed immediately with plenty of water, also under the eyelids for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.

If swallowed

Seek immediate medical attention.
Rinse mouth and if conscious, give 2 glasses of water. Get immediate medical attention. Never give anything by mouth to an unconscious person DO NOT INDUCE VOMITING.
Oxygen or artificial respiration if needed

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, erythema, blisters or even necrosis.

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 immediate medical attention and special treatment needed

Consult with an ophthalmologist immediately in all cases
If accidentally swallowed obtain immediate medical attention
When symptoms persist or in all cases of doubt, seek medical attention. Because of the likelihood of corrosive effects on the gastrointestinal tract after ingestion, attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided.

5. SECTION 5: FIRE-FIGHTING MEASURES

5.1 Extinguishing Media

Suitable Extinguishing Media
Unsuitable Extinguishing Media

Water, do not use any other substance
As above

5.2 Special hazards arising from the substance or mixture

Not combustible. Decomposes under fire conditions to release oxygen that intensifies the fire. Risk of explosion in closed, unventilated containers due to increased pressure from decomposition gases. Contact with combustible material may cause fire

5.3 Advice for fire-fighters

Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA).
Wear chemical resistant oversuit and boots (rubber or PVC)
Cool containers/tanks with water spray
If safe to do so, move product away from fire to secure area



Prevent fire extinguishing water from contaminating surface water of the ground water system

6. SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel

Avoid contact with skin, eyes and clothing.

Advice for emergency responders

Prevent further leakage or spillage if safe to do so. Isolate and post spill area, Eliminate all sources of ignition.

Wear suitable protective equipment. Refer to section 5 for fire-fighting; section 4 for first-aid advice; and section 8 for minimum requirements for personal protective equipment. Evacuate personnel to safe areas
Keep people away from and up wind of spill/leak

6.2 Environmental precautions

Do not allow to enter drains, sewers or watercourses. Should not be released into the environment

6.3 Methods and material for containment and cleaning up

Dam up
Do not mix waste streams during collection
Soak up with inert absorbant material
Keep in suitable, closed containers for disposal
Never return spills in original containers for re-use

6.4 Reference to other sections

Section 1 for emergency contact. Section 8 for information on appropriate personal protective equipment.

6.5 Additional Information

None

7. SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Avoid ingestion, inhalation and contact with skin and eyes
Use only with adequate ventilation.
Keep away from heat and sources of ignition.
Keep container tightly closed.
Wear protective gloves/clothing and eye/face protection.
Keep away from incompatible products
Use only clean and dry utensils

7.2 Conditions for safe storage, including any incompatibilities

Storage Temperature
Storage Conditions

Store between 4°C to 25°C
Protect from light.
Keep only in original container
Keep away from combustible materials and sources of ignition and heat.
Store in a receptacle equipped with a vent
Keep container closed
Regularly check the conditions and temperature of the containers.
Strong acids, strong alkalies, strong oxidising agents,

Incompatible materials



strong reducing agents, organic material, acetone and metals.

Suitable material

Aluminium 99,5%
Stainless steel passivated 316
Approved grades of HDPE
Polypropylene

7.3 Specific end use(s)

Apart from the use mentioned in Section 1.2 no other specific uses are stipulated. For further information please contact supplier

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Exposure Limit Values

Hydrogen Peroxide

UK. EH40 Workplace Exposure Limits (WELs) 2011

Time weighted average = 1ppm

Time weighted average = 1.4 mg/m³

UK.EH40 Workplace Exposure Limits (WELs) 2011

Short term exposure limit = 2ppm

Short term exposure limit = 2.8mg/m³

DE. MAK – Werte Liste (2012)

Time weighted average = 0.5ppm

Time weighted average = 0.71 mg/m³

US. ACGIH Threshold Limit Values 2016

Time weighted average = 1ppm

8.1.2 Other information on limit values

Predicted No Effect Concentration

Fresh water, .013 mg/l

Marine water, 0.013 mg/l

Sewage treatment plants, 4.7 mg/l

Derived No Effect Level/Derived minimal effect level

Workers, inhalation, acute exposure, 3 mg/m³, local effects
Workers, inhalation, chronic exposure, 1.4 mg/m³, local effects

Consumers, inhalation, acute exposure, 1.93 mg/m³, local effects

Consumers, inhalation, chronic exposure, 0.21 mg/m³, local effects

| SUBSTANCE. | CAS No. | LTEL (8 hr TWA ppm) | LTEL (8 hr TWA mg/m ³) | STEL (ppm) | STEL (mg/m ³) | Note: |
|----------------------------------|-----------|---------------------|------------------------------------|------------|---------------------------|-------|
| Hydrogen Peroxide ≥35% - ≤50% | 7722-84-1 | 1 | 1.4 | 2 | 2.8 | EH 40 |

8.2 Exposure controls

8.2.1 Appropriate engineering controls

Ensure adequate ventilation

Apply technical measures to comply with the occupational exposure limits



8.2.2 Personal protection equipment

Eye/face protection



Wear chemical safety glasses with side shields, or splash-proof goggles

Skin protection (Hand protection/ Other)



Impervious gloves
 Suitable material: PVC, butyl-rubber, nitrile rubber
 Any specific glove information provided is based on published literature and glove-manufacturer data. Contact the glove manufacturer for glove selection and breakthrough times for your use conditions.
 Inspect and replace worn or damaged gloves.
 Chemical resistant gloves are recommended.
 If contact with forearms is likely, wear gauntlet-style gloves.
 Nitrile, CEN standards EN 420 and EN 374 provide general requirements and list of glove types.

Respiratory protection



If engineering controls do not maintain airborne contaminant concentrations at a level which is adequate to protect worker health, an approved respirator may be appropriate. Respirator selection, use, and maintenance must be in accordance with regulatory requirements. Types of respirator to be considered for this mixture include: Half-face filter respirator; Type A filter material CEN standards EN136, EN140 and EN 405 provide respirator masks and EN 149 and EN 143 provide filter recommendations

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.

**8.2.3 Thermal hazards
 Environmental Exposure Controls**

None Known
 Dispose of rinse water in accordance with local and national regulations
 See sections 6,7,12,13

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

| | |
|------------------|-----------------|
| Appearance | Liquid |
| Colour | Colourless |
| Odour | Pungent |
| Molecular weight | 34 g/mol |
| pH (Value) | 2.02 (H2O2 50%) |



| | |
|--|--|
| Melting Point (°C) / Freezing Point (°C) | -33°C (H2O2 35%) |
| Boiling point/boiling range (°C): | 108°C (H2O2 35%) |
| Flash Point (°C) | Not applicable |
| Evaporation rate | No data available |
| Flammability (solid, gas) | Not applicable |
| Explosive limit ranges. | No data available |
| Vapour Pressure (mm Hg) | 1 mbar (H2O2 50%) at 30°C |
| Vapour Density (Air=1) | 1 |
| Density (g/ml) | 1.1 - 1.2 |
| Solubility (Water) | Miscible with water |
| Solubility (Other) | No data available |
| Partition Coefficient (n-Octanol/water) | Log Pow: -1.57, Method: calculated value |
| Auto Ignition Temperature (°C) | Not flammable |
| Decomposition Temperature (°C) | >60°C, Self-accelerating decomposition temperature (SADT) <60°C, Slow composition |
| Viscosity (mPa.s) | 1.17 mPa.s (H2O2 50%), at 20°C |
| Explosive properties | Not explosive |
| Oxidising properties | Mixture classified as oxidising with sub-category 2 |
| 9.2 Other information | Surface tension – 75.6 mN/m (H2O2 50%) at 20°C |

10. SECTION 10: STABILITY AND REACTIVITY

| | |
|--|---|
| 10.1 Reactivity | Stable under normal conditions of use Decomposes on heating Potential for exothermic hazard |
| 10.2 Chemical stability | Stable under recommended storage conditions Sensitive to heat and light. |
| 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 | Protect from freezing 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 Product(s) | Oxygen |

11. SECTION 11: TOXICOLOGICAL INFORMATION

| | |
|--|--|
| 11.1 Information on toxicological effects | |
| 11.1.1 Mixtures | |
| Acute toxicity | Acute oral toxicity: LD50, Rat: 1,270 mg/kg (H2O2 35%) Acute inhalation toxicity: LC50 4h, rat, >0.17 mg/l, vapour (H2O2 50%) Acute dermal toxicity LD50, Rabbit, >2,000 mg/kg (H2O2 35%) |



| | |
|--|---|
| Skin corrosion/Irritation | Rabbit: skin irritation (H2O2 35%) Irritating to skin. Effects may include: discolouration, Erythema, Odema. |
| Serious eye damage/eye irritation Corrosivity | Rabbit, Severe eye irritation (H2O2 10%) Corrosive to eyes. May cause irreversible eye damage. |
| Sensitisation | Guinea pig, did not cause sensitization on laboratory animals |
| Repeated dose toxicity | Oral, 90-day, mouse, Gastrointestinal tract, 300 ppm LOAEL Oral, 90-day, mouse, 100 ppm NOAEL Inhalation, 28-day rat, respiratory system, 10ppm, LOAEL, vapour Inhalation, 28-day, rat 2ppm, NOAEL, Vapour |
| Carcinogenicity | Oral, Prolonged exposure, mouse, Target organs: Duodenum, carcinogenic effects Dermal, prolonged exposure, mouse, animal testing did not show any carcinogenic effects |
| Mutagenicity | In vitro tests have shown mutagenic effects In vivo tests did not show mutagenic effects |
| Toxicity for reproduction | Substance is totally biotransformed (metabolized) Study scientifically unjustified |
| Specific target organ toxicity – single exposure | Inhalation, mice, 665 mg/m3, Remarks: RD 50, Irritating to respiratory system, H2O2 50% |
| 11.2 Other information | None |

12. SECTION 12: ECOLOGICAL INFORMATION

| | |
|---|--|
| 12.1 Toxicity | <ul style="list-style-type: none"> - LC50, 96hours, Pimephales promelas (fathead minnows): 16.4 mg/L - NOEC 96hours, Pimephales promelas 4.3mg/l - Crustaceans, Daphnia pulex, EC50, 48 h, 2.4 mg/l, fresh water, semi static test - Crustaceans, Daphnia pulex NOEC, 48 h, 1mg/l, fresh water, semi-static test - Algae, skeletonema costatum, EC50, growth rate, 72h, 2.6 mg/l - Algae, skeletonema costatum, NOEC, 72h, 0.63 mg/l - EC 50, 48 hours, Daphnia pulex (water flea): 2.4mg/L - Algae, chlorella vulgaris, NOEC, 72h, 0.1 mg/l |
| 12.2 Persistence and degradability | |
| <u>Abiotic Degradation</u> | <p>Air, indirect photo oxidation, t 1 /2 24h Conditions: sensitizer: OH radicals Water, redox reaction, t 1 /2, 120h Conditions: mineral and enzymatic catalysis, fresh water, salt water Soil, redox reaction, t 1 /2 12h. Conditions: mineral and enzymatic catalysis</p> |
| <u>Biodegradation</u> | |



| | |
|--|--|
| | 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 in soil | |
| 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 kPa.m ³ /mol Conditions 20°C Not significant |
| 12.5 Results of PBT and VPVB assessment | This substance is not considered to be persistent, bioaccumulating nor toxic (PBT) This substance is not considered to be very persistent nor very bioaccumulating (vPvB) |
| 12.6 Other adverse effects | No data available |

13. SECTION 13: DISPOSAL CONSIDERATIONS

| | |
|-------------------------------------|--|
| 13.1 Waste treatment methods | Handle in accordance with good industrial hygiene and safety practice. Refer to protective measures listed in sections 7 and 8. Empty containers retain residue (liquid and/or vapour) and can be dangerous. Do not burn, or use a cutting torch on, the empty drum. Dispose of in accordance with the European Directives on waste and hazardous waste. Waste must be classified and labelled prior to recycling or disposal. According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used. |
| 13.2 Additional Information | None |

14. SECTION 14: TRANSPORT INFORMATION

14.1 Land transport (ADR/RID)

| | |
|----------------------------|---|
| UN number | UN 2014 |
| Proper Shipping Name | HYDROGEN PEROXIDE, AQUEOUS SOLUTION |
| Transport hazard class(es) | 5.1 |
| ADR/RID-Labels | 5.1 – Oxidizing substances 8 - Corrosive |
| Packing Group | II |
| Hazard label(s) | |



| | |
|------------------------------|------|
| Environmental hazards | None |
| Special precautions for user | None |

14.2 Sea transport (IMDG)

| | |
|------------------------------|---|
| UN number | UN 2014 |
| Proper Shipping Name | HYDROGEN PEROXIDE, AQUEOUS SOLUTION |
| Transport hazard class(es) | 5.1 |
| IMDG Labels | 5.1 – Oxidizing substances 8 - Corrosive |
| Marine Pollutant | No |
| Special precautions for user | None |

14.3 Air transport (ICAO/IATA)

| | |
|------------------------------|--|
| UN number | UN 2014 |
| Proper Shipping Name | HYDROGEN PEROXIDE, AQUEOUS SOLUTION |
| Transport hazard class(es) | 5.1 |
| ICAO labels | 5.1 – Oxidizing substance 8 – corrosive |
| Packing Group | II |
| Environmental hazards | None |
| Special precautions for user | None |

| | |
|--|----------------|
| 14.4 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code | Not applicable |
|--|----------------|

15. SECTION 15: REGULATORY INFORMATION

| | |
|--|---|
| 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture substance or mixture | 1907/2006 – REACH 1272/2008 – CLP 528/2012 - BPR 98/2013 - EPP |
|--|---|



| | |
|---|--|
| 15.1.1 EU regulations Authorisations and/or restrictions on use | Refer to EU regulation for details of any actions or restrictions by the above regulations or directives |
| 15.1.2 National regulations | Refer to national regulation for details of any actions or restrictions by the above regulations or directives |
| 15.2 Chemical Safety Assessment | A Chemical Safety Assessment has been carried out for this mixture (hydrogen peroxide) |

16. SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements: 1, 2, 3, 8, 15 and 16 as of October 2016

LEGEND

| | |
|------|-----------------------------------|
| LTEL | Long Term Exposure Limit |
| STEL | Short Term Exposure Limit |
| STOT | Specific Target Organ Toxicity |
| DNEL | Derived No Effect Level |
| NOEC | No Observed Effect Concentration |
| PNEL | Predicted No Effect Concentration |

References: Sources of information used in preparing this SDS included one or more of the following: results from in-house or supplier toxicology studies; publications from trade associations; ECHA publications; EU guidelines and other sources as appropriate

Training advice: All users should be trained

Additional Information: None

Information contained in this publication or as otherwise supplied to Users is believed to be accurate and is given in good faith, but it is for the Users to satisfy themselves of the suitability of the product for their own particular purpose. Bioquell gives no warranty as to the fitness of the product for any particular purpose and any implied warranty or condition (statutory or otherwise) is excluded except to the extent that exclusion is prevented by law. Bioquell accepts no liability for loss or damage (other than that arising from death or personal injury caused by defective product, if proved), resulting from reliance on this information. Freedom under Patents, Copyright and Designs cannot be assumed.