Bioquell HPV-AQ

SAFETY DATA SHEET

ACCORDING TO WHMIS 2015 and GHS 5TH REVISED EDITION

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ACCORDING TO WHMIS 2015 & GHS 5TH REVISED EDITION

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_2O_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

1.3 Details of the supplier of the Safety Data Sheet

Company Identification	:	Bioquell Technology Canada Ltd
Address	:	2416 Main St, Suite 398. Vancouver, BC Canada V5T 3E2
Telephone	:	+1 215 475 9129
Fax	:	+1 215 682 0395
E-mail (details of responsible persons within individual countries)	:	http://www.bioquell.com/en-uk/contact/distributors/

1.4 Emergency telephone number

Emergency telephone number	:	Americas: +1-760-476-3962 Use access code: 333809

SECTION 2. HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

2.1.1 GHS 5th revised edition : Acute Tox. 4: Oral, H302. Inhalation, H332
Skin Irrit. 2, H315
Serious Eye Dam. 1, H318
STOT SE 3. Inhalation, H335
Oxidizer 2, H272

2.2 Label elements

2.2.1 Label elements : According to WHMIS 2015 & GHS 5th revised edition

Name(s) on Label	:	Bioquell HPV-AQ
Hazardous components	:	Hydrogen peroxide (35%)
Signal Word	:	DANGER
Hazard Pictogram	:	

Hazard statement(s) : **H302**: Harmful if swallowed
H315: Causes skin irritation
H332: Harmful if inhaled
H318: Causes serious eye damage
H335: May cause respiratory irritation
H272: May intensify fire; oxidizer.

Precautionary statement(s)

Prevention : **P210**: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P220: Keep away from clothing and other combustible materials.
P261: Avoid breathing gas/mist/vapours/spray.
P270: Do not eat, drink or smoke when using this product
P280: Wear protective gloves/eye protection/face protection.

Response : **P310**: Immediately call a POISON CENTRE or doctor/physician
P301 + P312 + P330: IF SWALLOWED: call a POISON CENTRE or doctor/physician if you feel unwell. Rinse mouth
P302 + P352: IF ON SKIN: Wash with plenty of soap and water.
P304 + P340: IF INHALED: Remove person 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.
P370 + P378: In case of fire: use water to extinguish.

Disposal : **P501**: Dispose of contents / container in accordance with EWC160903, or applicable local regulations

2.3 Other hazards : None

2.4 Additional Information : None

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 EU REACH Registration Number: 01-2119485845-22	

Classification according to WHMIS 2015 & GHS 5th revised edition

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 Oxidizer 2, H272
	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	
	Oxidizer	Category 2		H272	

3.2 Additional Information : For full text of H/P phrases see section 2.

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. 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, Diarrohea, 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 accidently 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.

SECTION 5. FIRE-FIGHTING MEASURES

5.1 Extinguishing Media

Suitable Extinguishing Media : Water, do not use any other substance

Unsuitable Extinguishing Media : 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 or the ground water system.

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. Prevent further leakage or spillage if safe to do so. Isolate and signpost spill area. Eliminate all sources of ignition.
Advice for emergency responders	:	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

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	:	Store between 4°C to 25°C
Storage Conditions	:	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.
Incompatible materials	:	Strong acids, strong alkalis, strong oxidising agents, 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.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters

8.1.1 Exposure Limit Values

Substance	Standard	Type	Exposure Limit Value	Notes
Hydrogen Peroxide CAS: 7722-84-1	UK.EH40 (2011) – Workplace Exposure Limits [WEL]	TWA	1 ppm	LTEL (8hr)
		TWA	1.4 mg/m^3	LTEL (8hr)
		STEL	2 ppm	
		STEL	2.8 mg/m^3	
	DE.MAK (2012) – Werte Liste	TWA	0.5 ppm	
		TWA	0.71 mg/m^3	
	US.ACGIH (2019) – Threshold Limit Values [TLVs]	TWA	1 ppm	
	US.OSHA (2019) – Permissible Exposure Limits [PELs]	TWA	1 ppm	
		TWA	1.4 mg/m^3	
	US.NIOSH (2019) – Recommended Exposure Limits [RELs]	TWA	1 ppm	(10hr)
	US.Cal/OSHA (2019)	TWA	1 ppm	(8hr)
	CA.British Columbia (2018)	TWA	1 ppm	
	CA.Quebec (2018)	TWA	1 ppm	
		TWA	1.4 mg/m^3	
	CA.TWAEV Ontario (2018)	TWA	1 ppm	
	CA.Alberta (2018)	TWA	1 ppm	
		TWA	1.4 mg/m^3	

8.1.2 Other information on limit values

Substance	Limit	Conditions	Value	Notes
Hydrogen Peroxide CAS: 7722-84-1	Predicted No Effect Concentration [PNEC]	Fresh water	0.13 mg/l	
		Marine water	0.013 mg/l	
		Sewage treatment plants	4.7 mg/l	
	Derived No Effect Level/Derived minimal effect level [DNEL/DMEL]	Workers, inhalation, acute exposure	3 mg/m^3	Local effects
		Workers, inhalation, chronic exposure	1.4 mg/m^3	Local effects
		Consumers, inhalation, acute exposure	1.93 mg/m^3	Local effects
		Consumers, inhalation, chronic exposure	0.21 mg/m^3	Local effects

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.
	Thermal hazards	:	None Known
8.2.3	**Environmental Exposure Controls**	:	Dispose of rinse water in accordance with local and national regulations See sections 6,7,12,13

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	:	Liquid
Colour	:	Colourless
Odour	:	Odourless
Molecular weight	:	34 g/mol
pH (Value)	:	2.02 (H_2O_2 50%)
Melting Point (°C) / Freezing Point (°C)	:	-33°C (H_2O_2 35%)
Boiling point/boiling range (°C)	:	108°C (H_2O_2 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 (H_2O_2 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 (H_2O_2 50%), at 20°C
Explosive properties	:	Not explosive
Oxidising properties	:	Oxidizing

9.2 Other information : Surface tension – 75.6 mN/m (H_2O_2 50%) at 20°C

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

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 (H_2O_2 35%) Acute inhalation toxicity: LC50 4h, rat, >0.17 mg/l, vapour (H_2O_2 50%) Acute dermal toxicity: LD50, rabbit, >2,000 mg/kg (H_2O_2 35%)
Skin corrosion/Irritation	:	Rabbit: skin irritation (H_2O_2 35%) Irritating to skin. Effects may include: discolouration, Erythema, Odema.
Serious eye damage/eye irritation	:	Rabbit: Severe eye irritation (H_2O_2 10%)
Corrosivity	:	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/m^3. Remarks: RD 50, Irritating to respiratory system, H_2O_2 50%

11.2 Other information : None

SECTION 12. ECOLOGICAL INFORMATION

12.1 Toxicity

Active Ingredient	Duration	Species	Value	Notes
Hydrogen Peroxide CAS: 7722-84-1	LC50, 96 hr	Pimephales promelas (fathead minnows)	16.4 mg/L	
	NOEC, 96 hr	Pimephales promelas	4.3 mg/L	
	EC50, 48 hr	Crustaceans: Daphnia pulex (water flea)	2.4 mg/L	Fresh water, semi static test
	NOEC, 48 hr	Crustaceans: Daphnia pulex	1 mg/L	Fresh water, semi static test
	EC50, 72 hr	Algae: Skeletonema costatum	2.6 mg/L	Growth rate
	NOEC, 72 hr	Algae: Skeletonema costatum	0.63 mg/L	
	NOEC, 72 hr	Algae: Chlorella vulgaris	0.1 mg/L	

12.2 Persistence and degradability

Abiotic Degradation : Air, indirect photo oxidation, t1/2: 24 hr (Conditions: sensitizer: OH radicals)
Water, redox reaction, t1/2: 120 hr (Conditions: mineral and enzymatic catalysis, fresh water, salt water)
Soil, redox reaction, t1/2: 12 hr (Conditions: mineral and enzymatic catalysis)

Biodegradation : Aerobic, t1/2 < 2 min (Conditions: biological treatment sludge): Readily biodegradable
Aerobic, t1/2 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

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.

13.2 Additional Information : None

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
Packing Group	:	II
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

SECTION 15. REGULATORY INFORMATION

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

15.1.1 Canadian Regulations	:	Refer to Canadian regulation for details of any actions or restrictions by relevant regulations or directives
WHMIS (2015)	:	Compliant.
Therapeutic Products Directorate	:	DIN: 02423014
15.1.1 Other National regulations	:	Refer to national regulation for details of any actions or restrictions by relevant regulations or directives
15.2 Chemical Safety Assessment	:	A Chemical Safety Assessment has been carried out for this mixture (hydrogen peroxide)

SECTION 16. OTHER INFORMATION

The following sections contain revisions or new statements	:	None (first issue).

ABBREVIATIONS & ACRONYMS

STOT	:	Specific Target Organ Toxicity
WEL	:	Workplace Exposure Limit
TLV	:	Threshold Limit Value
TWA	:	Time-Weighted Average
STEL	:	Short-Term Exposure Limit
LTEL	:	Long-Term Exposure Limit
PNEC	:	Predicted No Effect Concentration
DNEL	:	Derived No Effect Level
DMEL	:	Derived Minimal Effect Level
LOAEL	:	Lowest-observed-adverse-effect Level
NOAEL	:	No-observed-adverse-effect Level
NOEC	:	No Observed 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

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