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PERpose Plus[™]

Broad Spectrum Algaecide and Fungicide

SECTION 1 IDENTIFICATION

Product Identifier: HYDROGEN PEROXIDE AQUEOUS SOLUTION

Other Identifier: PERpose Plus

Manufactured By: Hubbard Hall , 1101 Compton Bridge Road, Inman, SC 29349

Supplier: BioWorks, Inc.

Address: 100 Rawson Rd., Ste. 205, Victor, NY 14564

Contact telephone number (Product Information): 800-877-9443.

Emergency telephone number (CHEMTREC): 1-800-424-9300.

Recommended use of the chemical: Algaecide/fungicide. It is a violation of federal law to use this product in a manner inconsistent with its labeling.

SECTION 2 HAZARDS IDENTIFICATION



Oxidizer



Corrosion



Health Hazard

Signal Word: Danger

Hazard Category:

Acute Toxicity-Oral Hazard Category 4

Skin Corrosion/Irritation Hazard Category 1C

Specific Target Organ Toxicity (Single Exposure) Hazard Category 2

Oxidizing Liquids Hazard Category 1

Hazard Statements:

Harmful if swallowed

Causes severe skin burns and eye damage

May cause allergy or asthma symptoms or breathing difficulties if inhaled.

May intensify fire or explosion: Strong oxidizer

Prevention:

Wash skin thoroughly after handling.

Do not eat, drink, or smoke when using this product.

Do not breathe dusts or mists.

Use only outdoors or in well ventilated area.

Keep away from heat.

Keep/Store away from clothing and other combustible material.

Take any precaution to avoid mixing with combustibles.

Wear fire/flare resistant/retardant clothing.

Keep container tightly closed.

Wear protective gloves, chemical protective clothing, eye protective goggles/ face shield for face protection. In case of inadequate ventilation wear respiratory protection.

Response:

Inhalation: If Inhaled: Remove person to fresh air and keep comfortable for breathing.

Skin: If on Skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse.

Eyes: If in Eyes: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.

Ingestion: If swallowed: Rinse mouth. Do NOT induce vomiting. Call poison control if you feel unwell.

In Case of Fire use water to extinguish.

Storage:

Store in a well ventilated place. Keep cool. Store Locked up.

Disposal: Dispose of contents/container in accordance with local, regional, national, or international regulations.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

<u>Component:</u>	<u>CAS No.:</u>	<u>% by Wt.:</u>
Hydrogen peroxide	7722-84-1	33.0 %

SECTION 4 FIRST-AID MEASURES

Inhalation: If Inhaled: **Remove person to fresh air and keep comfortable for breathing.**

Immediately call a physician.

Skin: If on Skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower. Wash contaminated clothing before reuse. If symptoms persist, call a physician

Eyes: If in Eyes: Rinse immediately with plenty of water, holding eyelids open, for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. In the case of difficulty of opening the eyelids, administer an analgesic eye wash (Oxybuprocaine). If eye irritation persists consult with a physician immediately.

Ingestion: If swallowed: rinse mouth with water) Do NOT induce vomiting. Consult with a physician immediately.

SECTION 5 FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water or water spray.

Unsuitable extinguishing media: None identified.

Specific hazards arising from the chemical: 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. Hazardous decomposition products may include oxygen and possibly other hazardous chemicals. This product spontaneously decomposes above 150 degrees celcius. A severe detonation hazard may exist when mixed with organic liquids, eg kerosene or gasoline. Hydrogen Peroxide itself is not flammable. Drying of product on clothing or combustible materials such as paper, fabrics, leather, may cause fire. Mixtures of Hydrogen Peroxide with flammable liquids (solvents) may possess explosive properties.

Contamination can cause rapid decomposition, release of oxygen and pressure. Hydrogen Peroxide in the proximity of an ongoing fire must be diluted with large amounts of water.

Special protective equipment and precautions for fire-fighters: Evacuate personnel to safe an area. In the event of fire, wear a self-contained breathing apparatus. Where contact with the product is possible wear an acid resistant suit. Keep containers and surroundings cool with water spray. Approach from upwind. Clean contaminated surfaces thoroughly.

In Case of major fire and large quantities: Evacuate area. Fight fire remotely due to risk of explosion.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Refer to protective measures listed in Sections 7 and 8. Isolate the area. Keep product away from incompatible materials. Prevent further leakage or spillage if it is safe to do so. In case of contact with combustible material, keep material wet with plenty of water.

Methods for cleaning up: Use damming to contain the spill. Soak up with an inert absorbent material or dilute with plenty of water. Do not add chemical products. Treat recovered material as described in the

Section 13, Disposal Considerations. Never return spilled product into the original container for reuse.

Environmental precautions: In case of accidental release or spill, immediately notify the appropriate authorities as required by federal, state and local laws and regulations. Do not dump into any sewers, onto the ground, or into any body of water. Dispose of in accordance with all federal, state and local laws and regulations.

SECTION 7 HANDLING AND STORAGE

Precautions for safe handling: Use only in well-ventilated areas. Keep away from heat. Keep away from incompatible materials such as organic materials. Use only equipment and materials which are compatible with the product. Before all operations, passivate piping and vessels in accordance with the manufacturer's instructions. Never return unused material to a storage container. Use only in an area with adequate water supply. Containers and equipment used to handle the product should be used exclusively for that product. Do not confine the product in piping between closed valves or in a container without adequate venting.

Storage: Store Locked Up. Keep in a cool, well ventilated place. Keep away from heat. Keep away from incompatible materials. Keep away from combustible materials. Store in containers with adequate ventilation. Store in the original container. Keep container closed. Store product in an area with secondary containment. Regularly check the condition and temperature of storage containers. Keep product and empty containers away from heat and sources of ignition. Information about special precautions needed for bulk handling is available on request.

Packaging material: Aluminum (99.5%), Stainless steel 304L/316L, or approved grades of HDPE.

SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits:

Component

OSHA PEL

ACGIH TLV

Hydrogen peroxide

1 ppm (1.4 mg/m³) TWA

1 ppm (TWA)

Note for TLV: Excursions may exceed 3 times the TLV-TWA for no more than a total of 30 minutes during a workday and under no circumstances should they exceed 5 times the TLV-TWA.

Engineering controls: Ensure adequate ventilation. Utilize other control methods as necessary to comply with the occupational exposure limits.

Personal protective equipment:

Respiratory protection: Use NIOSH approved respiratory protection. Wear an approved full face-piece air-supplied respirator for excessive or unknown concentrations, in confined areas, where there is insufficient oxygen, for large, uncontrolled emissions, and any time an air-purifying respirator does not give adequate protection.

Hand protection: Wear impervious chemical protective gloves such as PVC or rubber. Take note of the information given by the glove manufacturer concerning permeability and breakthrough times, and of special workplace conditions (mechanical strain, duration of contact, etc.).

Eye protection: Safety glasses with side-shields must be worn. If splashing is likely to occur, wear tight-fitting chemical resistant goggles or a face-shield over the safety glasses.

Skin and body protection: If splashes are likely to occur, wear chemical protective clothing such as a protective suit or apron and boots made of PVC, rubber or other suitable material.

Hygiene measures: Use only in an area equipped with facilities for quick drenching. When handling product, do not eat, drink or smoke. Handle in accordance with good industrial hygiene and safety practices.

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Colorless liquid.

Odor: Odorless

Molecular formula: H₂O₂.

Molecular Weight: 34 g/mol.

pH: 1 - 4.

Freezing point: 33 °C (27 °F) (H₂O₂, 33%).

Boiling point/boiling range: 108 °C (226 °F) (H₂O₂, 35 %).

Flash point : Not applicable.

Flammability: This product is not flammable.

Flammable limits: Not applicable.

Vapor pressure:

1 mbar (H₂O₂, 50 %) at 30 °C (86 °F).

12 mbar (H₂O₂, 50 %) (total pressure of H₂O₂ and H₂O at 20 °C (68 °F).

72 mbar (H₂O₂, 50 %) (total pressure of H₂O₂ and H₂O at 50 °C (122 °F).

Relative density / Density: 1.1 (H₂O₂, 27.5 %)

Solubility(ies): Soluble in water and polar organic solvents.

Partition coefficient: n-octanol/water: -1.1.

Viscosity: 1.07 mPa/s (H₂O₂, 27.5 %) at 20 °C (68 °F).

Vapor density: 1 (H₂O₂, 50 %).

Surface tension: 74 mN/m (H₂O₂, 27.5 %) at 20 °C (68 °F).

Decomposition temperature: Self-accelerating decomposition temperature (SADT): ≥ 60 °C (140 °F);
slow decomposition: < 60 °C (140 °F).

SECTION 10 STABILITY AND REACTIVITY

Reactivity: Potential for exothermic reaction with incompatible materials.

Chemical stability: Stable under recommended storage conditions.

Possibility of hazardous reactions: Avoid contact with acids, bases, metals, salts of metals, reducing agents, organic materials, and flammable materials.

Conditions to avoid: Avoid contamination. To avoid thermal decomposition, do not overheat. Keep at temperature below 60 °C (140 °F).

Hazardous decomposition products: Oxygen and possibly other hazardous chemicals.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute oral toxicity (LD50, rat): 1.232 mg/kg (H₂O₂, 50 %).

Acute inhalation toxicity (LC50, 4 h, rat): 2.000 mg/m³ (Hydrogen peroxide).

Acute dermal irritation/corrosion (LD50, rabbit): > 2.000 mg/kg (H₂O₂, 35 %).

Skin irritation (rabbit): No skin irritation (H₂O₂, 10 %).

Eye irritation: Risk of serious damage to eyes (H₂O₂, 33 %).

Irritation (other routes):

Inhalation (mouse): Irritating to respiratory system; RD₅₀ = 665 mg/m³ (Hydrogen peroxide).

Sensitization (guinea pig): Did not cause sensitization on laboratory animals.

Chronic toxicity:

Oral, prolonged exposure (various species): Observed effect on gastrointestinal tract.

Inhalation, repeated exposure [dog, LOEL (Lowest observable effect level): 14.6 mg/m³, irritant effects.

Carcinogenicity

Oral, prolonged exposure (mouse): Effects on duodenum; carcinogenic effects.

Dermal, prolonged exposure (mouse): Animal testing did not show any carcinogenic effects.

Remarks: Carcinogenic effect not applicable in humans.

Genetic toxicity:

In vitro: In vitro tests have shown mutagenic effects.

In vivo: Animal testing did not show any mutagenic effect.

SECTION 12 ECOLOGICAL INFORMATION

Acute eco-toxicity

Fishes, *Pimephales promelas* (LC₅₀, 96 h): 16.4 mg/l.

Fishes, *Pimephales promelas* (NOEC, 96 h): 5 mg/l.

Crustaceans (EC₅₀, 48 h): 2.4 mg/l.

Crustaceans NOEC, 48 h): 1 mg/l.

Chronic eco-toxicity

Molluscs (NOEC, 56 Days): 2 mg/l.

Algae, *Chlorella vulgaris* (EC₅₀, growth rate, 72 h): 4.3 mg/l.

Algae, *Chlorella vulgaris* (NOEC, 72 h): 0.1 mg/l.

Mobility

Air: Henry's law constant (H) = 1 Pa·m³/mol at 20 °C. Volatility not significant. Condensation on contact with water droplets.

Water: Product evaporates slowly.

Soil/sediments: Non-significant evaporation and adsorption.

Persistence and degradability:**Abiotic degradation:**

Air, indirect photo-oxidation (t_{1/2}): 16 - 20 h (conditions: sensitizer: OH radicals).

Water, redox reaction (t_{1/2}): 25 - 100 h (conditions: mineral and enzymatic catalysis, fresh water).

Water, redox reaction (t_{1/2}): 50 - 70 h (conditions: mineral and enzymatic catalysis, saltwater).

Soil, redox reaction (t_{1/2}): 0.05 - 15 h (conditions: mineral catalysis).

Biodegradation:

Aerobic (t_{1/2}): < 2 min (conditions: biological treatment sludge; readily biodegradable).

Aerobic (t_{1/2}): 0.3 - 5 d (conditions: fresh water; readily biodegradable).

Anaerobic: Not applicable

Effects on waste water treatment plants: Inhibitor (> 30 mg/l).

Bio-accumulative potential: Does not bio-accumulate.

Other adverse effects: Toxic to aquatic organisms, however, the hazard for the environment is limited due to the following properties of the product: (1) degradation products (H₂O and O₂) are not toxic, (2) product is inherently biodegradable and (3) product does not bio-accumulate.

SECTION 13 DISPOSAL CONSIDERATIONS

Waste from residues and unused products: Dispose of in accordance national, state, and local regulations. For small quantities, dilute with plenty of water and flush into the sewer with plenty of water. For larger quantities, contact manufacturer.

Contaminated packaging: Empty containers. Clean container with water. Dispose of rinse water in accordance with local and national regulations.

RCRA Hazardous Waste

Listed RCRA Hazardous Waste (40 CFR 302): No.

Characteristic RCRA Hazardous Waste (40 CFR 302): Yes (D001: ignitable waste; D002: corrosive waste).

SECTION 14 TRANSPORT INFORMATION

US DOT HMR

UN Proper Shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION

UN Number: 2014

Hazard Class (Subsidiary): 5.1 (8).

Packing Group: II.

Marine pollutant: No.

Labels: 5.1(8).

Emergency information: ERG: 140.

IATA DGR

UN Proper Shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION

UN Number: 2014

Hazard Class (Subsidiary risk): 5.1 (8).

Packing Group: II.

Labels: 5.1 (8).

Restrictions: Forbidden over 40%.

IMO IMDG Code

UN Proper Shipping name: HYDROGEN PEROXIDE, AQUEOUS SOLUTION

UN Number: 2014

Hazard Class (Subsidiary risk): 5.1 (8).

Labels: 5.1 (8).

Packing Group: II.

SECTION 15 REGULATORY INFORMATION

Toxic Substance Control Act (TSCA): In compliance with inventory. All components on composite list considered for transfer.

Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 302 Extremely Hazardous Substance (40 CFR 355, Appendix A): Not regulated.

SARA Hazard Designation (SARA 311/312):

Acute Health Hazard: Yes.

Fire Hazard: Yes.

Emergency Planning and Community Right-To-Know Act (EPCRA) SARA Title III Section 313 Toxic Chemicals (40 CFR 372.65): Supplier notification required; not regulated.

CERCLA Hazardous Substances (40 CFR 302): Not regulated.

New Jersey Worker and Community Right-to-Know Act (New Jersey Statute Annotated Section 34:5A-5): Yes.

Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323): Yes.

SECTION 16 OTHER INFORMATION

NFPA (National Fire Protection Association):

Health = 3; Flammability = 0; Instability = 1; Special =OX

HMIS (Hazardous Material Information System):

Health = 3; Fire = 0; Reactivity = 1; PPE: Supplied by user; dependent on local conditions

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