Section 1. Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product Code: 707011
Product Name: Catalase Hydrogen Peroxide

1.2 Relevant identified uses of the substance or mixture and uses advised against:
Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet:
Company Name: Cayman Chemical Company
1180 E. Ellsworth Rd.
Ann Arbor, MI 48108
Web site address: www.caymanchem.com
Information: Cayman Chemical Company +1 (734)971-3335

1.4 Emergency telephone number:
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
CHEMTREC Outside USA and Canada: +1 (703)527-3887

Section 2. Hazards Identification

2.1 Classification of the Substance or Mixture:
Oxidizing Liquids, Category 1
Acute Toxicity: Inhalation, Category 4
Acute Toxicity: Oral, Category 4
Skin Corrosion/Irritation, Category 1A

2.2 Label Elements:
GHS Signal Word: Danger
GHS Hazard Phrases:
H271: May cause fire or explosion; strong oxidizer.
H302: Harmful if swallowed.
H314: Causes severe skin burns and eye damage.
H332: Harmful if inhaled.

GHS Precautionary Phrases:
P210: Keep away from (heat/sparks/open flames/hot surfaces). - No smoking.
P220: Keep away from combustible materials.
P260: Do not breathe (dust/fume/gas/mist/vapors/spray).
P264: Wash (hands) thoroughly after handling.
P280: Wear (protective gloves/protective clothing/eye protection/face protection).

GHS Response Phrases:
P301+312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P303+361+353: IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
P304+340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P306+360: IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
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P310: Immediately call a POISON CENTER or doctor/physician.
P330: Rinse mouth.
P363: Wash contaminated clothing before reuse.

GHS Storage and Disposal Phrases:
Please refer to Section 7 for Storage and Section 13 for Disposal information.

UFI:

2.3 Adverse Human Health

Effects and Symptoms: Causes severe skin burns and eye damage.
Harmful if inhaled or swallowed.
Material may be irritating to the mucous membranes and upper respiratory tract.
May be harmful by skin absorption.
May cause eye, skin, or respiratory system irritation.

Medical Conditions: Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

Generally Aggravated By: To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Exposure:

Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>CAS # / RTECS #</th>
<th>Hazardous Components (Chemical Name)/REACH Registration No.</th>
<th>Concentration</th>
<th>EC No./EC Index No.</th>
<th>GHS Classification</th>
</tr>
</thead>
</table>
| 7722-84-1       | Hydrogen peroxide 01-2119485845-22-0000                   | 30.0 %        | 231-765-0 008-003-00-9 | Ox. Liq. 1: H271  
Acute Tox.(O) 4: H302  
Skin Corr. 1A: H314  
Acute Tox.(I) 4: H332 |
| 7732-18-5       | Water na                                                   | 70.0 %        | 231-791-2 NA        | No GHS classifications apply. |

Section 4. First Aid Measures

4.1 Description of First Aid Measures:

In Case of Inhalation: Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

In Case of Skin Contact: Immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

In Case of Eye Contact: Hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.

In Case of Ingestion: Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.
Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media:
Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray.
Use water spray to cool fire-exposed containers.

5.2 Flammable Properties and Hazards:
No data available.

Flash Pt: No data.
Explosive Limits:
LEL: No data. UEL: No data.
Autoignition Pt: No data.

5.3 Fire Fighting Instructions:
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes.

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures:
Avoid breathing vapors and provide adequate ventilation.

As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions:
Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material For Containment and Cleaning:
Contain spill and collect, as appropriate.
Transfer to a chemical waste container for disposal in accordance with local regulations.

Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling:
Avoid breathing dust/fume/gas/mist/vapours/spray.
Avoid prolonged or repeated exposure.
Keep away from sources of ignition.

7.2 Precautions To Be Taken in Storing:
Keep away from heat, sparks, and flame.
Keep container tightly closed.
Store in accordance with information listed on the product insert.

Other Precautions:
Keep away from combustible materials.
Light sensitive

Section 8. Exposure Controls/Personal Protection

8.1 Exposure Parameters:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Chemical Name</th>
<th>Jurisdiction</th>
<th>Recommended Exposure Limits</th>
<th>Notations</th>
</tr>
</thead>
<tbody>
<tr>
<td>7722-84-1</td>
<td>Hydrogen peroxide</td>
<td>ACGIH TLV</td>
<td>TLV: 1 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>France VL</td>
<td>TWA: 1.5 mg/m3 (1 ppm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA PELs</td>
<td>PEL: 1 ppm</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Britain EH40</td>
<td>TWA: 1.4 mg/m3 (1 ppm)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STEL: 2.8 mg/m3 (2 ppm)</td>
<td></td>
</tr>
</tbody>
</table>

8.2 Exposure Controls:

8.2.1 Engineering Controls (Ventilation etc.):
Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.
Section 8.2.2 Personal protection equipment:

Eye Protection: Safety glasses
Protective Gloves: Compatible chemical-resistant gloves
Other Protective Clothing: Lab coat
Respiratory Equipment: NIOSH approved respirator, as conditions warrant.
(Specify Type):
Work/Hygienic/Maintenance Practices: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.
Wash thoroughly after handling.
No data available.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States: [ ] Gas [ X ] Liquid [ ] Solid
Appearance and Odor: Solution
pH: No data.
Melting Point: No data.
Boiling Point: No data.
Flash Pt: No data.
Evaporation Rate: No data.
Flammability (solid, gas): No data available.
Explosive Limits: LEL: No data. UEL: No data.
Vapor Pressure (vs. Air or mm Hg): No data.
Vapor Density (vs. Air = 1): No data.
Specific Gravity (Water = 1): No data.
Solubility in Water: No data.
Octanol/Water Partition Coefficient: No data.
Decomposition Temperature: No data.
Autoignition Pt: No data.

9.2 Other Information
Percent Volatile: No data.
Molecular Formula & Weight: H2O2 34.0

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.
10.2 Stability: Unstable [ ] Stable [ X ]
10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.
Polymerization: Will occur [ ] Will not occur [ X ]
10.4 Conditions To Avoid: heat, flames, and sparks
10.5 Incompatibility - Materials to Avoid: brass copper iron and iron salts nickel oxidizing agents
Catalase Hydrogen Peroxide

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powdered metals
zinc

10.6 Hazardous Decomposition or Byproducts:
No data available.

Section 11. Toxicological Information

11.1 Information on Toxicological Effects:
The toxicological effects of this product have not been thoroughly studied.

Hydrogen peroxide - Toxicity Data:
Oral TDLO (woman): 1200 mg/kg; Oral LDLO (man): 1429 mg/kg;

Hydrogen Peroxide - Investigated as a mutagen and tumorigen

Carcinogenicity/Other Information:
Hydrogen peroxide - IARC: Group 3: Not classifiable as to its carcinogenicity to humans;

CAS #  Hazardous Components (Chemical Name)  NTP  IARC  ACGIH  OSHA
7722-84-1  Hydrogen peroxide  n.a.  3  A3  n.a.
7732-18-5  Water  n.a.  n.a.  n.a.  n.a.

Section 12. Ecological Information

12.1 Toxicity:
Avoid release into the environment.
Runoff from fire control or dilution water may cause pollution.

12.2 Persistence and Degradability:
No data available.

12.3 Bioaccumulative Potential:
No data available.

12.4 Mobility in Soil:
No data available.

12.5 Results of PBT and vPvB assessment:
No data available.

12.6 Other adverse effects:
No data available.

Section 13. Disposal Considerations

13.1 Waste Disposal Method:
Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT):
DOT Proper Shipping Name: Hydrogen peroxide, aqueous solutions [with not less than 20 percent but not more than 40 percent hydrogen peroxide (stabilized as necessary)]
DOT Hazard Class: 5.1 (8) OXIDIZER, CORROSIVE
UN/NA Number: UN2014 Packing Group: II
14.1 LAND TRANSPORT (European ADR/RID):

ADR/RID Shipping Name: Hydrogen peroxide, aqueous solutions [with not less than 20 percent but not more than 40 percent hydrogen peroxide (stabilized as necessary)]

UN Number: 2014  Hazard Class: 5.1 (8) - OXIDIZER, CORROSIVE

Packing Group: II

14.3 AIR TRANSPORT (ICAO/IATA):

ICAO/IATA Shipping Name: Hydrogen peroxide, aqueous solutions [with not less than 20 percent but not more than 40 percent hydrogen peroxide (stabilized as necessary)]

UN Number: 2014  Hazard Class: 5.1 (8) - OXIDIZER, CORROSIVE

Packing Group: II

IATA Classification: 5.1 (8)

Additional Transport Information:

Transport in accordance with local, state, and federal regulations. When sold in quantities of less than or equal to 1 mL, or 1 g, with an Excepted Quantity Code of E1, E2, E4, or E5, this item meets the De Minimis Quantities exemption, per IATA 2.6.10. Therefore packaging does not have to be labeled as Dangerous Goods/Excepted Quantity.

Section 15. Regulatory Information

EPA SARA (Superfund Amendments and Reauthorization Act of 1986) Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>S. 302 (EHS)</th>
<th>S. 304 RQ</th>
<th>S. 313 (TRI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>7722-84-1</td>
<td>Hydrogen peroxide</td>
<td>Yes 1000 LB</td>
<td>Yes 1000 LB</td>
<td>No</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Other US EPA or State Lists

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Hazardous Components (Chemical Name)</th>
<th>Other US EPA or State Lists</th>
</tr>
</thead>
<tbody>
<tr>
<td>7722-84-1</td>
<td>Hydrogen peroxide</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No</td>
</tr>
<tr>
<td>7732-18-5</td>
<td>Water</td>
<td>CAA HAP,ODC: No; CWA NPDES: No; TSCA: Yes - Inventory; CA PROP.65: No</td>
</tr>
</tbody>
</table>

Regulatory Information Statement:

The SDS was prepared in accordance with 29 CFR 1910.1200 and Regulation (EC) No.1272/2008.

Section 16. Other Information

Revision Date: 01/20/2020

Additional Information About This Product: No data available.

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