SAFETY DATA SHEET
Cat# K265-100, Hydrogen Peroxide Assay Kit

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME:         Hydorgen Peroxide Assay Kit
PRODUCT CODES:        Cat# K265-100
MANUFACTURER:          BioVision, Inc.
DIVISION:                      155 S. Milpitas Blvd. Milpitas, CA 95035
EMERGENCY PHONE:    858-373-8066
CHEMTREC PHONE:     408-493-1800
OTHER CALLS:              408-493-1801
FAX PHONE: 408-493-1801

SECTION 2: HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
<th>Volume</th>
<th>Safety Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assay Buffer</td>
<td>Proprietary Buffer</td>
<td>30 ml</td>
<td>No hazards</td>
</tr>
<tr>
<td>Probe</td>
<td>In DMSO</td>
<td>1 vial</td>
<td>See below</td>
</tr>
<tr>
<td>HRP</td>
<td>Lyophilized</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
<tr>
<td>H2O2 Standard</td>
<td>Liquid (contains 3% H2O2)</td>
<td>1 vial</td>
<td>See below</td>
</tr>
</tbody>
</table>

DMSO:
Emergency Overview
OSHA Hazards: Combustible liquid, Target organ effect
Target Organs: Eyes, Skin
GHS Classification: Flammable liquids (Category 4)
Pictogram: none
Signal word: Warning
Hazard statement(s): H227 Combustible liquid
Precautionary statement(s): None

GHS Label elements, including precautionary statements
Pictogram:
Signal word:
Hazard statement(s):
Precautionary statement(s):
P264 - Wash exposed skin thoroughly after handling
P280 - Wear protective gloves, eye protection
P302+P352 - IF ON SKIN: Wash with plenty of soap and water
P305+P351+P338 - IF in eyes: Rinse cautiously with water for several minutes. Remove contact

Hydrogen Peroxide:
Emergency Overview
OSHA Hazards: Skin irritation, Serious eye damage
Target organs: Eyes, skin
GHS Classification:
Skin irritation (category 2)
Serious eye damage (Category 1)
Pictogram:

Signal Word: warning
Hazard statement(s): H315 Causes skin irritation
H318: Causes serious eye damage

Precautionary statements (GHS-US):
P264 - Wash exposed skin thoroughly after handling
P280 - Wear protective gloves, eye protection
P302+P352 - IF ON SKIN: Wash with plenty of soap and water
P305+P351+P338 - IF in eyes: Rinse cautiously with water for several minutes. Remove contact
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lenses, if present and easy to do. Continue rinsing
P310 - Immediately call a POISON CENTER or doctor/physician
P332+P313 - If skin irritation occurs: Get medical advice/attention
P362 - Take off contaminated clothing and wash before reuse

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>EC-No.</th>
<th>Molecular Weight</th>
<th>Chemical Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMSO</td>
<td>60-00-4</td>
<td>200-449-4</td>
<td>292.24</td>
<td>C_{10}H_{16}N_{2}O_{8}</td>
</tr>
<tr>
<td>Hydrogen Peroxide</td>
<td>7722-84-1</td>
<td>:231-765-0</td>
<td>34</td>
<td>H_{2}O_{2}</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

General Inhalation: Normal use of this product does not pose an inhalation hazard. However, should respiratory tract irritation develop, discontinue use and remove to fresh air. Get medical attention if irritation or other symptoms develop or persist.
Skin: Should irritation develop, discontinue use. Wash affected skin thoroughly with soap and water. Get medical attention if irritation or other symptoms develop or persist.
Eye: Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. Get medical attention.
Ingestion: If swallowed, DO NOT induce vomiting. Get medical attention immediately.

SECTION 5: FIRE-FIGHTING MEASURES

DMSO:
Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special protective equipment for fire-fighters: Wear self-contained breathing apparatus for firefighting if necessary.
Hazardous combustion products: Hazardous decomposition products formed under fire conditions— see section 10.
Further information: Use water spray to cool unopened containers.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
Methods for cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. Normal measures for preventive fire protection.
Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.
Recommended storage temperature: room temperature

SECTION 8: EXPOSURE CONTROLS/PERSOAL PROTECTION

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen peroxide</td>
<td>7722-84-1</td>
<td>TWA</td>
<td>1ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Remarks:</td>
<td></td>
<td></td>
<td></td>
<td>Eye, skin, &amp; upper respiratory tract irritation.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) – Table Z-1: Limits for Air Contaminants</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>1ppm, 1.4 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td>Dimethyl sulfide</td>
<td>67-68-5</td>
<td>TWA</td>
<td>250.000000 ppm</td>
<td>USA. Workplace Environmental Exposure Levels (WEEL)</td>
</tr>
</tbody>
</table>

Personal protective equipment
Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).
Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection
Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection
Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Hydrogen peroxide</th>
<th>DMSO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Clear colorless liquid</td>
<td>Clear colorless liquid</td>
</tr>
<tr>
<td>pH:</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Water Solubility:</td>
<td>miscible</td>
<td>miscible</td>
</tr>
<tr>
<td>Other Solubility:</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling Point (°C):</td>
<td>No data available</td>
<td>189°C</td>
</tr>
<tr>
<td>Melting Point (°C):</td>
<td>No data available</td>
<td>16-19°C</td>
</tr>
<tr>
<td>Flash Point (°C):</td>
<td>No data available</td>
<td>89°C</td>
</tr>
<tr>
<td>Ignition Temp. (°C):</td>
<td>No data available</td>
<td>300-302°C</td>
</tr>
<tr>
<td>Density:</td>
<td>No data available</td>
<td>1.1 g/ml</td>
</tr>
</tbody>
</table>

### SECTION 10: STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>Hydrogen peroxide</th>
<th>DMSO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical stability:</td>
<td>Stable under recommended storage conditions</td>
<td></td>
</tr>
<tr>
<td>Conditions to avoid:</td>
<td>Direct sunlight, Extreme temperatures</td>
<td>Heat. Flame, sparks</td>
</tr>
<tr>
<td>Materials to avoid:</td>
<td>Reducing agents, strong bases, metals, combustible materials</td>
<td>Oxidizing agents</td>
</tr>
<tr>
<td>Hazardous decomposition products:</td>
<td>oxygen</td>
<td>Carbon oxides, sulfur oxides</td>
</tr>
</tbody>
</table>

### SECTION 11: TOXICOLOGICAL INFORMATION

**Hydrogen peroxide:**

- **Acute toxicity:** LD50 Oral – rat > 90000 mg/kg
- **Skin corrosion/irritation:** causes skin irritation
- **Serious eye damage/eye irritation:** causes serious eye damage
- **Respiratory or skin sensitization:** not classified
- **Germ cell mutagenicity:** not classified
- **Carcinogenicity:** not classified.
- **IARC:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- **ACGIH:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
- **NTP:** No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
- **OSHA:** No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

- **Specific target organ toxicity - single exposure (GHS):** no data available
- **Specific target organ toxicity - repeated exposure (GHS):** no data available
- **Aspiration hazard:** no data available
- **Potential health effects**
  - **Inhalation:** May be harmful if inhaled. Causes respiratory tract irritation.
  - **Skin:** Causes skin irritation.
  - **Eyes:** Causes eye damage
  - **Ingestion:** Harmful if swallowed

**DMSO:**

- **Acute toxicity:** LD50 Oral – rat – 14500 mg/kg
  - LC50 Inhalation – Rat – 4h – 40250 ppm
  - LC50 Dermal – Rabbit - > 5000 mg/kg
Skin corrosion/irritation: Skin – rabbit – no data available
Serious eye damage/eye irritation: no data available
Respiratory or skin sensitization: no data available
Germ cell mutagenicity: Mouse lymphocyte Cytogenetic analysis
Rat: Cytogenetic analysis
Mouse: DNA damage
Carcinogenicity: Carcinogenicity - Rat - Oral
Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin and Appendages: Other: Tumors.
Carcinogenicity - Mice - Oral
Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Leukaemia Skin and Appendages: Other: Tumors.
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Reproductive toxicity
Reproductive toxicity - Rat - Intraperitoneal
Effects on Fertility: Abortion.
Reproductive toxicity - Rat - Intraperitoneal
Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).
Reproductive toxicity - Rat - Subcutaneous
Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants).
Effects on Fertility: Litter size (e.g.; # fetuses per litter; measured before birth).
Reproductive toxicity - Mouse - Oral
Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.
Developmental Toxicity - Mouse - Intraperitoneal
Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.
Specific target organ toxicity - single exposure (GHS): no data available
Specific target organ toxicity - repeated exposure (GHS): no data available
Aspiration hazard: no data available
Potential health effects
  Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
  Skin: May be harmful if absorbed through skin. Causes skin irritation.
  Eyes: Causes eye irritation.
  Ingestion: Effects due to ingestion may include; Nausea, Fatigue, Headache
Signs and Symptoms of Exposure: To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.
Additional information: RTECS: PV6210000

SECTION 12: ECOLOGICAL INFORMATION

Hydrogen peroxide: No additional information available

DMSO:
  Toxicity:
  Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 34,000 mg/l - 96 h
  LC50 - Oncorhynchus mykiss (rainbow trout) - 35,000 mg/l - 96 h
  Toxicity to daphnia and other aquatic invertebrates
  EC50 - Daphnia magna (Water flea) - 24,600 mg/l - 48 h
  (OECD Test Guideline 202)
  Toxicity to algae EC50 - Pseudokirchneriella subcapitata (green algae) - 17,000 mg/l - 72 h
  (OECD Test Guideline 201)
  12.2 Persistence and degradability
  Biodegradability Result: 31% - According to the results of tests of biodegradability this product is not readily biodegradable.
  (OECD Test Guideline 301D)
  12.3 Bioaccumulative potential
  No data available
  12.4 Mobility in soil
  No data available
  12.5 Results of PBT and vPvB assessment
SECTION 13: DISPOSAL CONSIDERATIONS

Product: Observe all federal, state, and local environmental regulations.
Contaminated packaging: avoid release to the environment

SECTION 14: TRANSPORT INFORMATION

Hydrogen peroxide:
No dangerous goods in sense of transport regulations

DMSO:

DOT (US)
NA-Number: 1993 Class: NONE Packing group: III
Proper shipping name: Combustible liquid, n.o.s. (Dimethyl sulfoxide)
Reportable Quantity (RQ):
Poison Inhalation Hazard: No
IMDG
Not dangerous goods
IATA
Not dangerous goods

SECTION 15: REGULATORY INFORMATION

SARA 302 Components: SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
SARA 313 Components: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.
Massachusetts Right To Know Components: No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right To Know Components: DMSO, CAS-No. 67-68-5
New Jersey Right To Know Components: DMSO, CAS-No. 67-68-5
California Prop. 65 Components: This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16: OTHER INFORMATION:

DISCLAIMER:
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. BioVision, Inc., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.