MATERIAL SAFETY DATA SHEET
Cat# K676-100, Glucose Uptake Colorimetric Assay Kit

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Glucose Uptake Colorimetric Assay Kit
PRODUCT CODES: Cat# K676-100
MANUFACTURER: BioVision, Inc.
DIVISION:
ADDRESS: 155 South Milpitas Blvd., Milpitas, CA 95035
EMERGENCY PHONE: 858-373-8066
CHEMTREC PHONE: OTHER CALLS: 408-493-1800
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>Extraction Buffer</td>
<td>Proprietary Buffer</td>
<td>17 ml</td>
<td>No hazards</td>
</tr>
<tr>
<td>Neutralization Buffer</td>
<td>Proprietary Buffer (contains MOPS)</td>
<td>2.5 ml</td>
<td>See below</td>
</tr>
<tr>
<td>2-Deoxyglucose (2-DG, 10 mM)</td>
<td>Liquid</td>
<td>1 ml</td>
<td>No hazards</td>
</tr>
<tr>
<td>Assay Buffer</td>
<td>Proprietary Buffer</td>
<td>25 ml</td>
<td>No hazards</td>
</tr>
<tr>
<td>Enzyme Mix</td>
<td>Lyophilized</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
<tr>
<td>Recycling Mix</td>
<td>Lyophilized</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
<tr>
<td>2-DG6P Standard</td>
<td>Lyophilized</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
<tr>
<td>Glutathione Reductase</td>
<td>Lyophilized</td>
<td>2 vials</td>
<td>No hazards</td>
</tr>
<tr>
<td>Substrate-DTNB</td>
<td>Lyophilized</td>
<td>2 vials</td>
<td>No hazards</td>
</tr>
</tbody>
</table>

MOPS:
Emergency Overview
OSHA Hazards: Irritant
GHS Classification:
Acute toxicity, Oral (Category 5)
Skin irritation (Category 2)
Eye irritation (Category 2A)
Specific target organ toxicity – single exposure (Category 3)

GHS Label elements, including precautionary statements
Pictogram:

Signal word: Warning
Hazard statement(s):
H303 May be harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.

Precautionary statement(s):
P261 Avoid breathing dust/fumes/gas/mist/vapors/spray.
P264 Wash hands thoroughly after handling.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification
Health hazard: 2
Flammability: 1
Physical hazards: 0

NFPA Rating
Health Hazard: 2
Fire: 1
Reactivity Hazard: 0

Potential Health Effects
Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
Skin: May be harmful if absorbed through skin. Causes skin irritation.
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Eyes: Causes eye irritation.
Ingestion: May be harmful if swallowed.

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>MOPS</td>
<td>1132-61-2</td>
<td>214-478-5</td>
<td>209.26</td>
<td>C7H15NO4S</td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.
In case of skin contact: Wash off with soap and plenty of water. Consult a physician.
In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.
If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

SECTION 5: FIRE-FIGHTING MEASURES

Condition of flammability: Not flammable or combustible.
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.

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.
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.
Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.
Recommended storage temperature: -20 °C

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Contain no substances with occupational exposure limit values.
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>MOPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>White powder</td>
</tr>
<tr>
<td>pH:</td>
<td>2.5</td>
</tr>
<tr>
<td>Water Solubility:</td>
<td>209 g/l</td>
</tr>
<tr>
<td>Other Solubility:</td>
<td>No data available</td>
</tr>
</tbody>
</table>
**SECTION 10: STABILITY AND REACTIVITY**

<table>
<thead>
<tr>
<th>Property</th>
<th>MOPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical stability</td>
<td>Stable under recommended storage conditions</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>No data available</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>Strong oxidizing agents, strong bases</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>Carbon oxides, nitrogen oxides, sulfur oxides</td>
</tr>
</tbody>
</table>

**SECTION 11: TOXICOLOGICAL INFORMATION**

MOPS:
- **Acute toxicity:** LD50 Oral – rat – >2,000 mg/kg
- **Skin corrosion/irritation:** no data available
- **Serious eye damage/eye irritation:** no data available
- **Respiratory or skin sensitization:** no data available
- **Germ cell mutagenicity:** no data available

**Carcinogenicity:**
- **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:** no data available

**Teratogenicity:** no data available

**Specific target organ toxicity – single exposure (GHS):** Inhalation – may cause respiratory irritation.

**Specific target organ toxicity – repeated exposure (GHS):** 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:** May be harmful if swallowed.

**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: QE9104530

**SECTION 12: ECOLOGICAL INFORMATION**

MOPS:
- **Persistence and degradability:** no data available
- **Toxicity:** Toxicity to daphnia and other aquatic invertebrates: EC50 – Daphnia magna (Water flea) – >100 mg/l – 48 h
- **Bioaccumulative potential:** no data available
- **Mobility in soil:** no data available
- **PBT and vPvB assessment:** no data available
- **Other adverse effects:** no data available

**SECTION 13: DISPOSAL CONSIDERATIONS**

**Product:** Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging:** Dispose of as unused product.

**SECTION 14: TRANSPORT INFORMATION**

**DOT (US):** Not dangerous goods.

**IMDG:** Not dangerous goods.

**IATA:** Not dangerous goods.

**SECTION 15: REGULATORY INFORMATION**
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MSDS DATE: Jul 24, 2012

SARA 302 Components: SARA 302: No chemical in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components: SARA 313: 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.

SARA 311/312 Hazards: MOPS: Acute Health Hazard

Massachusetts Right To Know Components: No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components:
MOPS, CAS-No. 1132-61-2

New Jersey Right To Know Components:
MOPS, CAS-No. 1132-61-2

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.

EU regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Risk Phrases</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOPS</td>
<td>R36/37/38</td>
<td>S22, S24/25, S36/37/39, S45</td>
</tr>
</tbody>
</table>

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.