SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Acid Sphingomyelinase Activity Colorimetric Assay Kit

PRODUCT CODES: Cat# K192-100

MANUFACTURER: BioVision, Inc.
DIVISION: Address: 155 South Milpitas Blvd., Milpitas, CA 95035

EMERGENCY PHONE: 858-373-8066
CHEMTREC PHONE: 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>ASMase Assay Buffer I</td>
<td>Liquid</td>
<td>20 ml</td>
<td>No hazards</td>
</tr>
<tr>
<td>ASMase Assay Buffer II</td>
<td>Liquid</td>
<td>15 ml</td>
<td>No hazards</td>
</tr>
<tr>
<td>ASMase Substrate (Lyophilized)</td>
<td>--</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
<tr>
<td>ASMase Enzyme Mix I (Lyophilized)</td>
<td>--</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
<tr>
<td>ASMase Enzyme Mix II (Lyophilized)</td>
<td>--</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
<tr>
<td>Choline Standard (Lyophilized)</td>
<td>Contains Choline</td>
<td>1 vial</td>
<td>See below</td>
</tr>
<tr>
<td>ASMase Probe (DMSO)</td>
<td>In DMSO</td>
<td>0.2 ml</td>
<td>See below</td>
</tr>
<tr>
<td>ASMase Enhancer</td>
<td>Liquid</td>
<td>10 ul</td>
<td>No hazards</td>
</tr>
</tbody>
</table>

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

HMIS Classification
Health hazard: 0
Chronic Health Hazard: *
Flammability: 2
Physical hazards: 0

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

Potential Health Effects
Inhalation: May be harmful if inhaled. May cause respiratory tract irritation.
Skin: May be harmful if absorbed through skin. May cause skin irritation.
Eyes: May cause eye irritation.
Ingestion: May be harmful if swallowed.
Aggravated Medical Condition: Avoid contact w/DMSO solutions containing toxic materials or materials with unknown toxicological properties. DMSO is readily absorbed through skin and may carry such materials into the body.

Choline chloride:
Emergency Overview
OSHA Hazards: Target organ effect
Target Organs: Eyes, Skin
GHS Classification: Skin irritation (Category 2)
Eye irritation (Category 2A)
Specific target organ toxicity - single exposure (Category 3), Respiratory system
GHS Label elements, including precautionary statements
Pictogram: !
Signal word: Warning
Hazard statement(s): H315 Causes skin irritation.
H319 Causes serious eye irritation.
H335 May cause respiratory irritation

Precautionary statement(s):
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash skin thoroughly after handling.
P271 Use only outdoors or in a well-ventilated area.
P280 Wear protective gloves/ eye protection/ face protection.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 IF INHALED: Remove victim 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.

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>67-68-5</td>
<td>200-664-3</td>
<td>78.13</td>
<td>C₂H₆OS</td>
</tr>
<tr>
<td>Choline chloride</td>
<td>67-48-1</td>
<td>200-655-4</td>
<td>139.62</td>
<td>C₅H₁₄ClNO</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

DMSO:
Suitable extinguishing media: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for firefighters: 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.

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: -20 °C.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

DMSO:

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
</table>

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Tumors.
Carcinogenicity

Genotoxicity in vivo
Genotoxicity in vitro
Germ cell mutagenicity:
Respiratory/skin sensitization:
Serious eye damage/eye irritation:
Skin corrosion/irritation:

LD50 Dermal
LC50 Inhalation

Acute toxicity

DMSO

SECTION 10: STABILITY AND REACTIVITY

Property | DMSO | Choline chloride
---|---|---
Appearance: | Clear liquid | white solid
pH: | No data available | 5.0-6.5
Water Solubility: | Completely miscible | 140 g/L
Other Solubility: | No data available | No data available
Boiling Point (°C): | 189 °C (372 °F) | No data available
Melting Point (°C): | 16-19 °C (61-66 °F) | 302 - 305 °C
Flash Point (°C): | 87 °C (189 °F) | No data available
Ignition Temperature (°C): | 301 °C (574 °F) | No data available
Density: | 1.1 g/ml | No data available

SECTION 11: TOXICOLOGICAL INFORMATION

DMSO:

Acute toxicity: LD50 Oral - rat - 14,500 mg/kg
LC50 Inhalation - rat - 4 h - 40250 ppm
LD50 Dermal - rabbit - > 5,000 mg/kg

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory/skin sensitization: no data available

Germ cell mutagenicity: Genotoxicity in vitro - mouse – lymphocyte\rightarrow Cytogenetic analysis
Genotoxicity in vitro - mouse – lymphocyte\rightarrow Mutation in mammalian somatic cells.
Genotoxicity in vivo - rat – Intraperitoneal\rightarrow Cytogenetic analysis
Genotoxicity in vivo - mouse – Intraperitoneal\rightarrow DNA damage

Carcinogenicity: Carcinogenicity – rat – Oral\rightarrow Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin & 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.
Choline chloride:

Acute toxicity: LD50 Oral - rat - 3,400 mg/kg
Remarks: Sense Organs and Special Senses (Nose, Eye, Ear, and Taste):Eye:Chromodacryorrhea.
Behavioral:Excitement. Respiratory disorder
Inhalation: no data available
Dermal: no data available
Skin corrosion/irritation: no data available
Serious eye damage/eye irritation: no data available
Respiratory/skin sensitization: no data available
Germ cell mutagenicity: no data available

Carcinogenicity: no data available
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 carcinogen or potential 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

Additional Information: RTECS: PV6210000

SECTION 12: ECOLOGICAL INFORMATION

DMSO:
Persistence and degradability: no data available
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 pulex (Water flea) – 27,500 mg/l
Toxicity to algae: EC50 – Lepomis macrochirus (Bluegill) – >400,000 mg/l – 96 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.
Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

DOT (US): Not dangerous goods.
IMDG: Not dangerous goods.
IATA: Not dangerous goods.
SAFETY DATA SHEET
Cat# K192-100 Acid Sphingomyelinase Activity Colorimetric Assay Kit

SECTION 15: REGULATORY INFORMATION

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 II, Section 313.
SARA 311/312 Hazards: DMSO: Fire Hazard, Chronic Health Hazard
Massachusetts Right To Know Components: No components are subject to the Massachusetts Right to Know Act.
Pennsylvania Right To Know Components: Dimethyl sulfoxide CAS-No. 67-68-5; Revision Date: 2007-03-01
Choline chloride: CAS-No. 67-48-1
New Jersey Right To Know Components: Dimethyl sulfoxide CAS-No. 67-68-5; Revision Date: 2007-03-01
Choline chloride, CAS-No. 67-48-1
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>DMSO</td>
<td>R10, R36/37/38</td>
<td>S24/25, S36/37/39, S45</td>
</tr>
<tr>
<td>Choline chloride</td>
<td>R36/37/38</td>
<td>S26, S36</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.