SAFETY DATA SHEET
Cat# K575-100, Tyrosinase Inhibitor Screening Kit  SDS DATE: 23APR2015

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Tyrosinase Inhibitor Screening Kit
PRODUCT CODES: Cat# K575-100
MANUFACTURER: BioVision, Inc.
ADDRESS: 155 S. Milpitas Boulevard, 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>Product Name/Chemical Name</th>
<th>Description</th>
<th>Amount</th>
<th>Safety Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tyrosinase Assay Buffer</td>
<td>Proprietary Buffer</td>
<td>30 ml</td>
<td>No hazards</td>
</tr>
<tr>
<td>Tyrosinase Substrate</td>
<td>powder</td>
<td>3 mg</td>
<td>No hazards</td>
</tr>
<tr>
<td>Tyrosinase</td>
<td>lyophilized powder</td>
<td>500ug</td>
<td>No hazards</td>
</tr>
<tr>
<td>Tyrosinase Enhancer</td>
<td>contains MBTH, DMSO</td>
<td>20ug</td>
<td>See below</td>
</tr>
<tr>
<td>Inhibitor Control</td>
<td>Proprietary Mix</td>
<td>100ug</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.

3-methyl-2-benzothiazolinone hydrazone hydrochloride hydrate:

Emergency Overview
OSHA Hazards: Target Organ Effect
Target Organs: Eyes, Skin
GHS Classification: inhalation, skin (Category 5)
GHS Label elements, including precautionary statements
Pictogram: none
Signal word: Warning
Hazard statement(s): H303: May be harmful if swallowed
H313: May be harmful in contact with skin
H320: Causes eye irritation
Precautionary statement(s): P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
P262: Do not get in eyes, on skin, or on clothing
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P302+352: IF ON SKIN: Wash with plenty of water
P301+330+331: IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P305+351+338: 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: 1
SAFETY DATA SHEET  
Cat# K575-100, Tyrosinase Inhibitor Screening Kit  
Chronic Health Hazard: *  
Flammability: 1  
Physical hazards: 0  
NFPA Rating  
Health hazard: 1  
Fire: 1  
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.  

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS  
<table>
<thead>
<tr>
<th>Component</th>
<th>CAS Number</th>
<th>EC-No.</th>
<th>MW</th>
<th>Concentration</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>neat</td>
<td>C2H6OS</td>
</tr>
<tr>
<td>3-methyl-2-benzothiazolinone hydrazone hydrochloride hydrate</td>
<td>14448-67-0</td>
<td>233.7</td>
<td>1%</td>
<td>C8H9N3S • HCl • H2O</td>
<td></td>
</tr>
</tbody>
</table>

SECTION 4: FIRST AID MEASURES  
General advice: Consult a physician. Show this safety data sheet to the doctor in attendance.  
If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration.  
In case of skin contact: Wash off with soap and plenty of water.  
In case of eye contact: Flush eyes with water as precaution.  
If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water.  

5: FIRE-FIGHTING MEASURES  
Condition of flammability: 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 combustion products formed under fire conditions—no data available.  

SECTION 6: ACCIDENTAL RELEASE MEASURES  
Personal precautions: Avoid dust formation. Avoid breathing vapors, mist, gas, or dust. Ensure adequate ventilation.  
Environmental precautions: Do not let product enter drains.  
Methods for cleaning up: Sweep up and shovel. Keep in suitable, closed containers for disposal.  

SECTION 7: HANDLING AND STORAGE  
Precautions for safe handling  
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: 15-25 °C  

SECTION 8: EXPOSURE CONTROLS/PERSONAL 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>Dimethyl sulfoxide</td>
<td>67-68-5</td>
<td>TWA</td>
<td>250 ppm</td>
<td>USA, Workplace Environmental Exposure Levels (WEEL)</td>
</tr>
</tbody>
</table>

3-methyl-2-benzothiazolinone hydrazone hydrochloride hydrate:  
Contains no substances with occupational exposure limit values.  

Personal protective equipment  
Respiratory protection  
Respiratory protection is not required. Where protection from nuisance levels of dusts are desired, use type N95 (US) or type P1 (EN 143) dust masks. 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  
Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).  

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choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific workplace. use equipment for eye protection tested and approved under appropriate government standards such as niosh (us) or en 166 (eu).

hygiene measures
general industrial hygiene practice.

section 9: physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>DMSO</th>
<th>MBTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Clear liquid</td>
<td>clear liquid</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
<td>No data available</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Completely miscible</td>
<td>No data available</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>189 °C (372 °F)</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting Point (°C)</td>
<td>16-19 °C (61-66 °F)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash Point (°C)</td>
<td>87 °C (189 °F)</td>
<td>No data available</td>
</tr>
<tr>
<td>Ignition Temp. (°C)</td>
<td>301 °C (574 °F)</td>
<td>No data available</td>
</tr>
<tr>
<td>Density</td>
<td>1.1 g/ml</td>
<td>No data available</td>
</tr>
</tbody>
</table>

section 10: stability and reactivity

<table>
<thead>
<tr>
<th>Property</th>
<th>MBTH</th>
<th>DMSO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemical stability</td>
<td>Stable under recommended storage conditions</td>
<td>Heat, flames, sparks</td>
</tr>
<tr>
<td>Conditions to avoid</td>
<td>No data available</td>
<td>Acid chlorides, phosphorus halides, strong acids, strong oxidizing agents, strong reducing agents</td>
</tr>
<tr>
<td>Materials to avoid</td>
<td>No data available</td>
<td>Carbon oxides, sulfur oxides</td>
</tr>
<tr>
<td>Hazardous decomposition products</td>
<td>No data available</td>
<td>No data available</td>
</tr>
</tbody>
</table>

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: Skin – rabbit – no skin irritation – 4h
Serious eye damage/eye irritation: Eyes – rabbit – mild eye irritation
Respiratory or skin sensitization: no data available
Germ cell mutagenicity: Genotoxicity in vitro – mouse – lymphocyte: Cytogenetic analysis
Genotoxicity in vivo – rat – Intraperitoneal: Cytogenetic analysis
Genotoxicity in vivo – mouse – Intraperitoneal: DNA damage
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: post-implantation mortality (e.g. reduction in number of implants per female; total number of implants per corpora lutea). Effects on embryo/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. 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 with 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.

Signs and Symptoms of Exposure: Effects due to ingestion may include: nausea, fatigue, and/or headache.

Additional Information: RTECS: PV6210000

MBTH:
Acute Toxicity
Oral LD50 Rat: 179 mg/kg
Dermal LD50 Rabbit: 12300 mg/kg
Chronic toxicity: Chronic exposure may cause nausea and vomiting, higher exposure causes unconsciousness.

Local effects: Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.

Specific effects: May include moderate to severe erythema (redness) and moderate edema (raised skin), nausea, vomiting, headache.

Carcinogenic effects: No data is available on the product itself.

Mutagenic effects: No data is available on the product itself.

Reproductive toxicity: No data is available on the product itself.

Additional Information: RTECS: DL7160200

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

DMSO:

Proper shipping name: Combustible liquid, n.o.s. (Dimethyl sulfoxide)

Marine pollutant: No; Poison Inhalation Hazard: No

IMDG: Not dangerous goods.

IATA: Not dangerous goods.

MBTH:

DOT (US) UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solids, organic, n.o.s. (3-Methylbenzothiazol-2(3H)-one hydrazone hydrochloride)

Reportable Quantity (RQ): Marine pollutant: No Poison Inhalation Hazard: No

IMDG UN number: 2811 Class: 6.1 Packing group: III EMS-No: F-A, S-A
Proper shipping name: TOXIC SOLID, ORGANIC, N.O.S. (3-Methylbenzothiazol-2(3H)-one hydrazone hydrochloride)

Marine pollutant: No

IATA UN number: 2811 Class: 6.1 Packing group: III
Proper shipping name: Toxic solid, organic, n.o.s. (3-Methylbenzothiazol-2(3H)-one hydrazone hydrochloride)

SECTION 15: REGULATORY INFORMATION

OSHA Hazards: Triton X-100: Irritant, Harmful by ingestion

DMSO: Combustible liquid, Target organ effect

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: Triton X-100, Acute Health Hazard

Massachusetts Right To Know Components: None present

Pennsylvania Right To Know Components: Disodium tetraborate CAS-No. 1330-43-4 Revision Date 1993-04-24

Triton X-100, CAS-No. 9002-93-1

Dimethyl sulfoxide CAS-No. 67-68-5, Revision Date: 2007-03-01
SAFETY DATA SHEET
Cat# K575-100, Tyrosinase Inhibitor Screening Kit
New Jersey Right To Know Components:
Triton X-100, CAS-No. 9002-93-1
Dimethyl sulfoxide CAS-No. 67-68-5; Revision Date: 2007-03-01
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.

<table>
<thead>
<tr>
<th>Component</th>
<th>Risk Phrases</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Triton X-100</td>
<td>R22, R52/53</td>
<td>S22, S36/37/39, S45</td>
</tr>
</tbody>
</table>

SECTION 16: OTHER INFORMATION

OTHER INFORMATION:
PREPARATION 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.