SAFETY DATA SHEET
Cat# K829-100 Tyrosine Phosphatase Activity Assay Kit

SECTION 1: PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Tyrosine Phosphatase Activity Assay Kit
PRODUCT CODES: Cat# K829-100
MANUFACTURER: BioVision, Inc.
DIVISION:  
ADDRESS: 155 S. 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>PTPase Assay Buffer</td>
<td>Liquid</td>
<td>25 ml</td>
<td>No hazards</td>
</tr>
<tr>
<td>Disulfide Reducing Agent (DTT)</td>
<td>Contains DTT</td>
<td>300 µl</td>
<td>See below</td>
</tr>
<tr>
<td>Fluorescence Standard</td>
<td>In DMSO</td>
<td>50 µl</td>
<td>See below</td>
</tr>
<tr>
<td>PTPase Inhibitor (Suramin)</td>
<td>--</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
<tr>
<td>PTPase Substrate</td>
<td>--</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
<tr>
<td>PTPase Positive Control</td>
<td>--</td>
<td>1 vial</td>
<td>No hazards</td>
</tr>
</tbody>
</table>

DTT:
Emergency Overview
OSHA Hazards: Target organ effect, Harmful by ingestion, Irritant
Target Organs: Central nervous system
GHS Classification: Acute toxicity, Oral (Category 4)
Skin irritation (Category 2)
Eye irritation (Category 2A)
GHS Label elements, including precautionary statements
Pictogram:

Signal word:
Hazard statement(s):
H302 Harmful if swallowed
H315 Causes skin irritation
H319 Causes serious eye irritation
Precautionary statement(s):
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
 Chronic Health Hazard: *
 Flammability: 0
 Physical hazards: 0

NFPA Rating
 Health hazard: 2
 Fire: 0
 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.
 Eyes: Causes eye irritation.
 Ingestion: Harmful if swallowed.

DMSO:
Emergency Overview
OSHA Hazards: Combustible liquid, Target organ effect
Target Organs: Eyes, Skin
GHS Classification: Flammable liquids (Category 4)
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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.

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>DTT</td>
<td>3483-12-3</td>
<td>222-468-7</td>
<td>154.25</td>
<td>C₄H₁₀O₂S₂</td>
</tr>
<tr>
<td>DMSO</td>
<td>67-68-5</td>
<td>200-664-3</td>
<td>78.13</td>
<td>C₂H₄O₇S</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: DO NOT induce vomiting. 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 combustion products formed under fire conditions — no data available.
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 inhalation of vapor or mist. Use explosion-proof equipment. Keep away from sources of ignition (no smoking). Take measures to prevent the buildup of electrostatic charge.
Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.
Recommended storage temperature: -20 °C

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

DMSO:
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SDS DATE: Apr 25, 2017

<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>

DDT:
Contains 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>DTT</th>
<th>DMSO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance:</td>
<td>Clear liquid</td>
<td>Clear liquid</td>
</tr>
<tr>
<td>pH:</td>
<td>3.0-5.0</td>
<td>No data available</td>
</tr>
<tr>
<td>Water Solubility:</td>
<td>Highly soluble</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>No data available</td>
<td>189 °C (372 °F)</td>
</tr>
<tr>
<td>Melting Point (°C)</td>
<td>No data available</td>
<td>16-19 °C (61-66 °F)</td>
</tr>
<tr>
<td>Flash Point (°C)</td>
<td>No data available</td>
<td>87 °C (189 °F)</td>
</tr>
<tr>
<td>Ignition Temp. (°C)</td>
<td>No data available</td>
<td>301 °C (574 °F)</td>
</tr>
<tr>
<td>Density:</td>
<td>1.035 g/cm³</td>
<td>1.1 g/ml</td>
</tr>
</tbody>
</table>

SECTION 10: STABILITY AND REACTIVITY

<table>
<thead>
<tr>
<th>Property</th>
<th>DTT</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>Bases, oxidizing agents, reducing agents, alkali metals</td>
<td></td>
</tr>
<tr>
<td>Hazardous decomposition: products:</td>
<td>Carbon oxides, sulfur oxides, hydrogen sulfide gas</td>
<td>Carbon oxides, sulfur oxides</td>
</tr>
</tbody>
</table>

SECTION 11: TOXICOLOGICAL INFORMATION

DDT:
Acute toxicity: no data available
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
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: Harmful if swallowed.

Signs and Symptoms of Exposure: Exposure may cause central nervous system depression. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects: no data available

Additional information: RTECS: not available

DMSO:

Acute toxicity: LD50 Oral - rat - 14,500 mg/kg; LC50 Inhalation - rat - 4 h - 40250 ppm; LD50 Dermal - rabbit - > 5,000 mg/kg
Irritation and corrosion: Skin - rabbit - Mild skin irritation - 24 h; Eyes - rabbit - Mild eye irritation

Sensitisation: no data available

Chronic exposure
Carcinogenicity: rat - Oral
Tumorigenic: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen by OSHA.

Carcinogenicity: mouse - Oral
Tumorigenic: 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.

Genotoxicity: No component of this product present at levels greater than or equal to 0.1% is identified 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.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by IARC.

DMSO:

Developmental Toxicity - mouse - Intraperitoneal; Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system; 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: Intraocular; 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.

Additional information: RTECS: PV6210000

SECTION 12: ECOLOGICAL INFORMATION

DMSO:

Elimination information (persistence and degradability): no data available

Ecotoxicity effects: 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

Further information on ecology: no data available

SECTION 13: DISPOSAL CONSIDERATIONS

Product: Offer surplus and non-recyclable solutions to a licensed disposal company. Contact licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging: Dispose of as unused product.

SECTION 14: TRANSPORT INFORMATION

DTT:

DOT (US): Not dangerous goods.
IMDG: Not dangerous goods.
IATA: Not dangerous goods.

DMSO:

DOT (US): UN-Number: 1993 Class: CBL Packing group: III; 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.

SECTION 15: REGULATORY INFORMATION

OSHA Hazards: DTT: Target organ effect, Harmful by ingestion, Irritant
DMSO: Combustible liquid, Target organ effect

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DSL Status: All components of this product are on the Canadian DSL list.

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: 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: DTT: Acute Health Hazard, Chronic Health Hazard 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: DTT, CAS-No. 3483-12-3

Dimethyl sulfoxide, CAS-No. 67-68-5

New Jersey Right To Know Components: DTT, CAS-No. 3483-12-3

Dimethyl sulfoxide, 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, or any other reproductive defects.

EU regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Risk Phrases</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>DTT</td>
<td>R22, R36/37/38</td>
<td>S26, S36</td>
</tr>
<tr>
<td>DMSO</td>
<td>R10, R36/37/38</td>
<td>S24/25, 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.