1. PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Protease/Phosphatase Inhibitor Cocktail (100X)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Number</td>
<td>5872</td>
</tr>
<tr>
<td>Identified Uses</td>
<td>For Research Use Only (RUO). Not intended for use in humans or animals. Not intended for therapeutic or diagnostic procedures.</td>
</tr>
</tbody>
</table>

Manufacturer/Supplier  
Cell Signaling Technology, Inc.  
3 Trask Lane  
Danvers, MA 01923 USA  
Phone #: 1-978-867-2300  
Emergency Tel#: 1-978-578-6737

2. HAZARDS IDENTIFICATION

Emergency Overview

Warning!  
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)  
Harmful if inhaled or swallowed.  
Causes respiratory tract, eye, and skin irritation.  
May be harmful if absorbed through skin.  
Contains material that can cause target organ damage.  
Suspect cancer hazard – contains material which may cause cancer.

Physical State  
Liquid

Routes of Entry:  
Dermal contact. Eye contact. Inhalation. Ingestion.

Potential Health Effects

Acute Toxicity

- Eyes: Irritating to eyes.  
- Skin: Harmful if contact with skin  
- Inhalation: Toxic if inhaled. Irritating to respiratory system.  
- Ingestion: Toxic if swallowed

Chronic Effects

- Carcinogenic effects: Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.  
- Mutagenic effects: No known significant effects or critical hazards.  
- Teratogenic effects: No known significant effects or critical hazards.  
- Reproductive toxicity: No known significant effects or critical hazards.  
- Sensitization: No information available

Target organ effects  
Contains material which causes damage to the following organs: Heart. Teeth.  
Contains material which causes damage to the following organs: Kidneys, gastrointestinal tract, upper respiratory tract, skin, bones, central nervous system (CNS), eye, lens, or cornea.

3. COMPOSITION/INFORMATION ON INGREDIENTS
Hazardous Ingredients

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disodium beta-glycerophosphate</td>
<td>819-83-0</td>
<td>3-5%</td>
</tr>
<tr>
<td>Disodium dihydrogenpyrophosphate</td>
<td>7758-16-9</td>
<td>1-3%</td>
</tr>
<tr>
<td>Sodium fluoride</td>
<td>7681-49-4</td>
<td>1-3%</td>
</tr>
<tr>
<td>Trisodium tetraoxovanadate</td>
<td>13721-39-6</td>
<td>1-3%</td>
</tr>
<tr>
<td>Tyrpsin inhibitor, pancreatic basic</td>
<td>9087-70-1</td>
<td>0.1-1%</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Eye Contact: Rinse immediately with plenty of water. Get medical attention.
Skin Contact: Rinse immediately with soap and plenty of water. Get medical attention.
Inhalation: Move to fresh air. Get medical attention.
Ingestion: Call Poison Control Center immediately. Never give anything by mouth to an unconscious person. Rinse mouth with water.
Notes to physician: Treat symptomatically.

5. FIRE FIGHTING MEASURES

Flash Point: See Section 9. Physical and Chemical Properties
Suitable Extinguishing Media: Use dry chemical
Special exposure hazards: No data available
Special protection for fire fighters: Wear appropriate self-contained breathing apparatus and protective unit
Other information: No data available

6. ACCIDENTAL RELEASE MEASURES

Personal precautions: Do not touch or walk through spilled material. Wear personal protective equipment.
Environmental precautions: Do not let product enter drains.
Clean up methods: Soak up with absorbent material. Keep in suitable closed containers for disposal.
Other information: See sections 12 and 13 for additional information.

7. HANDLING AND STORAGE

Safe handling advice: Avoid contact with eyes and skin. Ensure adequate ventilation.
Storage conditions: Keep container tightly closed in a cool dry location.
Incompatibilities: No data available
Specific end uses: No data available

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits: Ingredients with workplace control parameters

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>OSHA PEL (TWA)</th>
<th>OSHA PEL (Z2)</th>
<th>ACGIH OEL (TLV)</th>
<th>NIOSH REL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium fluoride</td>
<td>2.5 mg/m³ 8hours. (as F)</td>
<td>2.5 mg/m³ 8hours. Form: Dust</td>
<td>2.5 mg/m³ 8hours. (as F)</td>
<td>2.5 mg/m³ 10 hours. (as F)</td>
</tr>
</tbody>
</table>
Exposure Controls
Apply technical measures to comply with the occupational exposure limits.

Engineering Controls
Emergency eyewash and safety shower. Mechanical exhaust required.

Hygiene Measures
Do not eat, drink or smoke when handling product. Wash hands thoroughly after handling product. Wash contaminated clothing before reuse.

Personal Protective Equipment
Respiratory Protection: In case of insufficient ventilation wear suitable respiratory equipment.
Eye Protection: Safety glasses with side shields
Skin and body protection: Wear suitable protective clothing, protective shoes or boots.
Hand protection: Compatible chemical resistant gloves.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>liquid</td>
</tr>
<tr>
<td>Appearance</td>
<td>no data available</td>
</tr>
<tr>
<td>Odor</td>
<td>odorless</td>
</tr>
<tr>
<td>pH</td>
<td>no data available</td>
</tr>
<tr>
<td>Water Solubility</td>
<td>Soluble</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>no data available</td>
</tr>
<tr>
<td>Boiling point</td>
<td>no data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>no data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>no data available</td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Flammability limits in air</td>
<td>no data available</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>no data available</td>
</tr>
<tr>
<td>VOC content</td>
<td>no data available</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>no data available</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

| Stability                      | stable under normal conditions |
| Conditions/Materials to avoid  | no data available              |
| Hazardous decomposition products | no data available           |

11. TOXICOLOGICAL INFORMATION

Acute Toxicity
To the best of our knowledge, the chemical, physical and toxicological properties have not been fully investigated.

Routes of Exposure

Potential Health Effects
Acute Toxicity

<table>
<thead>
<tr>
<th>Eyes</th>
<th>Risk of serious damage to eyes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin</td>
<td>Toxic in contact with skin</td>
</tr>
<tr>
<td>Inhalation</td>
<td>Toxic by inhalation</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Toxic if swallowed</td>
</tr>
</tbody>
</table>

### Ingredient Name

| Disodium dihydrogenpyrophosphate | LD50 Oral | Rat | 1800 mg/kg |
| Sodium fluoride                 | LD50 Oral | Rat | 31 mg/kg   |
| Trisodium tetraoxovanadate     | Eyes Moderate Irritant | Rabbit | 330 mg/kg |

### Chronic Effects

- **Carcinogenic effects**: Contains material which may cause cancer. Risk of cancer depends on duration and level of exposure.
- **Mutagenic effects**: No known significant effects or critical hazards.
- **Teratogenic effects**: No known significant effects or critical hazards.
- **Reproductive toxicity**: No known significant effects or critical hazards.
- **Sensitization**: No information available

### Target organ effects

Contains material which causes damage to the following organs: Heart. Teeth. Contains material which causes damage to the following organs: Kidneys, gastrointestinal tract, upper respiratory tract, skin, bones, central nervous system (CNS), eye, lens, or cornea.

### Ecological Information

- **Ecotoxicity**: The environmental impact of this product has not been fully investigated. No known significant effects or critical hazards.
- **Persistence and degradability**: Not available
- **Bioaccumulation**: Not available
- **Mobility**: Not available

### Disposal Considerations

Dispose of in accordance with all applicable environmental laws and regulations.

### Transport Information

- **IATA**: Not regulated as dangerous goods
- **DOT**: Not regulated as dangerous goods
15. REGULATORY INFORMATION

HCS Classification
 Toxic material
 Irritating material
 Carcinogen
 Target Organ Effects

International Inventories
 TSCA (8a) PAIR  Trisodium tetraoxovanadate
 EINECS/ELINCS  -
 ENCS  -
 IECSC  -
 KECL  -
 PICCS  -
 AICS  -
 NZIoC  -

U.S. Federal Regulations
 SARA 302/304/311/312 extremely hazardous products: No products were found.
 SARA 302/304/311/312 emergency planning and notification: No products were found.
 SARA 302/304/311/312 hazardous chemicals: Sodium fluoride. Trisodium tetraoxovanadate
 SARA 311/312 MSDS Distribution:
 Sodium fluoride: Immediate (acute) health hazard, Delayed (chronic) health hazard.
 Trisodium tetraoxovanadate: Delayed (chronic) health hazard.
 Commerce Control List precursor: Sodium fluoride

Clean Water Act
 This product the following components are listed as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42): Sodium fluoride.

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)
 This product does not contain any substances regulated as hazardous air pollutants (HAPs) under Section 112 of the Clean Air Act Amendments of 1990.

U.S. State Regulations
 Massachusetts  The following components are listed: Sodium fluoride.
 New York  The following components are listed: Sodium fluoride.
 New Jersey  The following components are listed: Sodium fluoride.
 Pennsylvania  The following components are listed: Sodium fluoride.
 U.S. Inventory (TSCA 8b)  At least one component is listed.

Canada
 WHMIS Hazard Class
 D1B Toxic. Material causing immediate and serious toxic effects.
 D2A Very toxic. Materials causing other toxic effects.
 D2B Toxic. Materials causing other toxic effects.

Canadian NPR
 The following components are listed: Sodium fluoride. Vanadium.
CEPA Toxic Substances The following components are listed: Inorganic fluorides.
Canada Inventory At least one component is listed.

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

16. OTHER INFORMATION

Revision date 2012-05-22
Revision Note ***Indicates updated section

Disclaimer
The information provided on this material safety data sheet is to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Material Safety Data Sheet