Section 1. Identification of the Substance/Mixture and of the 

1.1 Product Code: 0009097
Product Name: TrxR DMSO

1.2 Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses: For research use only, not for human or veterinary use.

1.3 Details of the Supplier of the Safety Data Sheet
Company Name: Cayman Chemical Company
Emergency Contact: CHEMTREC Within USA and Canada: +1 (800)424-9300
Alternate Emergency Contact: CHEMTREC Outside USA and Canada: +1 (703)527-3887
Information: Cayman Chemical Company +1 (734)971-3335
Web site address: www.caymanchem.com

Section 2. Hazards Identification

<table>
<thead>
<tr>
<th>GHS Classification</th>
<th>Placard</th>
<th>Key word</th>
<th>GHS hazard phrase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serious Eye Damage/Eye Irritation, Category 2A</td>
<td>Exclamation point</td>
<td>Warning</td>
<td>Causes serious eye irritation</td>
</tr>
<tr>
<td>Skin Corrosion/Irritation, Category 2</td>
<td>Exclamation point</td>
<td>Warning</td>
<td>Causes skin irritation</td>
</tr>
<tr>
<td>Flammable Liquids, Category 4</td>
<td>none</td>
<td>Warning</td>
<td>Combustible liquid</td>
</tr>
</tbody>
</table>

GHS Hazard Phrases: H319: Causes serious eye irritation
H315: Causes skin irritation.
H227: Combustible liquid.

GHS Precaution Phrases: P264: Wash hands thoroughly after handling.
P280: Wear protective gloves/clothing and eye/face protection as specified by the manufacturer/supplier or the competent authority.
P210: Keep away from {heat/sparks/open flames/hot surfaces}. - No smoking.

GHS Response Phrases: P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+313: If eye irritation persists, get medical advice/attention.
P302+352: IF ON SKIN: Wash with plenty of soap and water.
P332+313: If skin irritation occurs, get medical advice/attention.
P362: Take off contaminated clothing and wash before re-use.

GHS Storage and Disposal Phrases: Please refer to Section 7 for Storage and Section 13 for Disposal information.

2.3 Adverse Human Health Effects and Symptoms:
Causes skin and serious eye irritation.
DMSO has the potential to carry toxic materials or materials of unknown toxicity into the body.
DMSO is readily absorbed through skin.
Material may be irritating to the mucous membranes and upper respiratory tract.
May be harmful by inhalation, ingestion, or skin absorption.
May cause respiratory system irritation.
To the best of our knowledge, the toxicological properties have not been thoroughly investigated.

Target Organs: Eyes, Reproductive system, Kidneys, Respiratory system, Liver, Skin.

LD 50 / LC 50: Please refer to Section 11.
Section 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>Concentration</th>
<th>EC#</th>
<th>Risk Phrases</th>
<th>RTECS #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide, anhydrous</td>
<td>67-68-5</td>
<td>100.0 %</td>
<td>200-664-3</td>
<td>R36/38</td>
<td>PV6210000</td>
</tr>
</tbody>
</table>

Section 4. First Aid Measures

4.1 Description of First Aid Measures:

4.1.1 In Case of Inhalation:
Remove to fresh air. If not breathing, give artificial respiration or give oxygen by trained personnel. Get immediate medical attention.

4.1.2 In Case of Skin Contact:
Immediately wash skin with soap and plenty of water for at least 20 minutes. Remove contaminated clothing. Get medical attention if symptoms occur. Wash clothing before reuse.

4.1.3 In Case of Eye Contact:
Hold eyelids apart and flush eyes with plenty of water for at least 20 minutes. Have eyes examined and tested by medical personnel.

4.1.4 In Case of Ingestion:
Wash out mouth with water provided person is conscious. Never give anything by mouth to an unconscious person. Get medical attention. Do NOT induce vomiting unless directed to do so by medical personnel.

4.2 Important Symptoms and Effects, Both Acute and Delayed:
No data available.

4.3 Indication of any immediate medical attention and special treatment needed:
No data available.

Section 5. Fire Fighting Measures

5.1 Suitable Extinguishing Media:
Use alcohol-resistant foam, carbon dioxide, water, or dry chemical spray. Use water spray to cool fire-exposed containers.

5.2 Flammable Properties and Hazards:
Can release vapors that form explosive mixtures at temperatures at or above the flashpoint. Container explosion may occur under fire conditions. Emits toxic fumes under fire conditions. Sensitive to static discharge. Vapors can travel to a source of ignition and flash back.

Flash Pt: 89.00 C Method Used: Closed Cup
Autoignition Pt: 215.00 C
Explosive Limits: LEL: 3.5% at 25.0 C UEL: 42.0% at 25.0 C
Hazardous Combustion Products: No data available.

5.3 Fire Fighting Instructions:
As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent), and full protective gear to prevent contact with skin and eyes. Note: Combustible as diluted in dimethyl sulfoxide

Section 6. Accidental Release Measures

6.1 Protective Precautions, Protective Equipment and Emergency Procedures:
Avoid breathing vapors and provide adequate ventilation. As conditions warrant, wear a NIOSH approved self-contained breathing apparatus, or respirator, and appropriate personal protection (rubber boots, safety goggles, and heavy rubber gloves).

6.2 Environmental Precautions:
Take steps to avoid release into the environment, if safe to do so.

6.3 Methods and Material For Containment and Cleaning Up:
Contain spill and collect, as appropriate. Transfer to a chemical waste container for disposal in accordance with local regulations.
Section 7. Handling and Storage

7.1 Precautions To Be Taken in Handling:
Avoid breathing dust/fume/gas/mist/vapours/spray.
Avoid prolonged or repeated exposure.
Keep away from sources of ignition.
Take precautionary measures against static discharge.

7.2 Precautions To Be Taken in Storing:
Keep away from heat, sparks and flame.
Keep container tightly closed.
Store in accordance with information listed on the product insert.

Other Precautions:
Hygroscopic.

Hazard Label Information:
Avoid contact with skin and eyes.
Do not reuse this container.
Use with adequate ventilation.
Wash thoroughly after handling.

Section 8. Exposure Controls/Personal Protection

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>OSHA PEL</th>
<th>ACGIH TLV</th>
<th>Other Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide, anhydrous</td>
<td>67-68-5</td>
<td>No data</td>
<td>No data</td>
<td>No data</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>Britain EH40</th>
<th>France VL</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide, anhydrous</td>
<td>67-68-5</td>
<td>No data</td>
<td>No data</td>
<td>No data</td>
</tr>
</tbody>
</table>

Protective Equipment Summary - Hazard Label Information:
Compatible chemical-resistant gloves  Eye wash station in work area  Lab coat  Safety glasses  Safety shower in work area  Vent Hood

8.2.1 Engineering Controls (Ventilation etc.):
Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits.

8.2.2.1 Eye Protection:
Safety glasses

8.2.2.2 Protective Gloves:
Compatible chemical-resistant gloves

Other Protective Clothing:
Lab coat

8.2.2.3 Respiratory Equipment (Specify Type):
NIOSH approved respirator, as conditions warrant.

Work/Hygienic/Maintenance Practices:
Do not take internally.
Facilities storing or utilizing this material should be equipped with an eyewash and a safety shower.
Wash thoroughly after handling.

8.2.3 Environmental Exposure Controls:
No data available.

Section 9. Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Physical States:  [ ] Gas  [X] Liquid  [ ] Solid
Appearance and Odor: Solution
Melting Point:  No data.
Boiling Point:  No data.

Flash Pt:  89.00 C  Method Used:  Closed Cup
Evaporation Rate:  No data.

Explosive Limits:
LEL:  3.5% at 25.0 C  UEL:  42.0% at 25.0 C

Vapor Pressure (vs. Air or mm Hg):  0.37 MM_HG at 20.0 C
Vapor Density (vs. Air = 1):  No data.
Specific Gravity (Water = 1):  No data.
Solubility in Water:  No data.
Autoignition Pt:  215.00 C
Explosive Properties: No data available.
Oxidizing Properties: No data available.
9.2 Other Information
Percent Volatile: No data.

Section 10. Stability and Reactivity

10.1 Reactivity: No data available.
10.2 Stability: Unstable [ ] Stable [ X ]
10.3 Stability Note(s): Stable if stored in accordance with information listed on the product insert.
10.4 Conditions To Avoid: heat, flames and sparks
10.3 Polymerization: Will occur [ ] Will not occur [ X ]
10.5 Incompatibility - Materials To Avoid: acid chlorides phosphorus halides strong acids alkali metals strong oxidizing agents strong reducing agents
10.6 Hazardous Decomposition Or Byproducts: carbon monoxide carbon dioxide sulfur oxides

Section 11. Toxicological Information

11.1 Information on Toxicological Effects: The toxicological effects of this product have not been thoroughly studied.

DMSO - Toxicity Data: Oral LD50 (rat): 14,500 mg/kg; Skin LD50 (rat): 40,000 mg/kg; Oral LD50 (mouse): 7,920 mg/kg; Skin LD50 (mouse): 50,000 mg/kg; Skin TDLO (woman): 1,800 mg/kg; Inhalation LC50 (rat): >1,600 mg/m3 (4h);

DMSO - Irritation Data: Eyes (rabbit): 100 mg mild; Skin (rabbit): 500 mg (24h) mild;

Chronic Toxicological Effects: DMSO - Investigated as a mutagen, reproductive effector, and tumorigen. Only select Registry of Toxic Effects of Chemical Substances (RTECS) data is presented here. See actual entry in RTECS for complete information.

DMSO RTECS Number: PV6210000

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>NTP</th>
<th>IARC</th>
<th>ACGIH</th>
<th>OSHA</th>
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</thead>
<tbody>
<tr>
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<td>67-68-5</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Carcinogenicity: NTP? No IARC Monographs? No OSHA Regulated? No

Section 12. Ecological Information

12.1 Toxicity: Avoid release into the environment. Runoff from fire control or dilution water may cause pollution.

Section 13. Disposal Considerations

13.1 Waste Disposal Method: Dispose in accordance with local, state, and federal regulations.

Section 14. Transport Information

14.1 LAND TRANSPORT (US DOT)
DOT Proper Shipping Name Not dangerous goods.

14.1 LAND TRANSPORT (European ADR/RID)
ADR/RID Shipping Name Not dangerous goods.
**14.3 AIR TRANSPORT (ICAO/IATA)**

**ICAO/IATA Shipping Name:** Not dangerous goods.

**Additional Transport Information:** Transport in accordance with local, state, and federal regulations.

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**Section 15. Regulatory Information**

**European Community Hazard Symbol codes**

Xi: Irritant

**European Community Risk and Safety Phrases**

- R36/38 - Irritating to eyes and skin.
- S24/25 - Avoid contact with skin and eyes.
- S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S36/37/39 - Wear suitable protective clothing, gloves and eye/face protection.
- S45 - In case of accident or if you feel unwell, seek medical advice immediately (show the label whenever possible.)

**US EPA SARA Title III**

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>Sec.302 (EHS)</th>
<th>Sec.304 RQ</th>
<th>Sec.313 (TRI)</th>
<th>Sec.110</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide, anhydrous</td>
<td>67-68-5</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

**Other US EPA or State Lists**

<table>
<thead>
<tr>
<th>Hazardous Components (Chemical Name)</th>
<th>CAS #</th>
<th>CAA HAP,ODC</th>
<th>CWA NPDES</th>
<th>TSCA</th>
<th>CA PROP.65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimethyl sulfoxide, anhydrous</td>
<td>67-68-5</td>
<td>No</td>
<td>No</td>
<td>Inventory</td>
<td>No</td>
</tr>
</tbody>
</table>

**Regulatory Information Statement:**

This SDS was prepared in accordance with Regulation (EC) No.1272/2008 and European Directive 67/548/EEC as amended.

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**Section 16. Other Information**

**Revision Date:** 08/14/2013

**Company Policy or Disclaimer**

DISCLAIMER: This information is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes.

N.A.=Not available, N.P.=Not applicable, N.D.=Not determined, N.E.=Not established, N.R.=Not required