Material Safety Data Sheet

IDENTITY (As Used on Label and List)

SZT (SrZrTi) SOL-GEL SOLUTION

Section I

Manufacturer's Name: Mitsubishi Materials Corporation
Emergency Telephone Number: 81-795-68-2320

Address (Number, Street, City, State And ZIP Code):
12-6 Technopark, Sanda, Hyogo 669-1339, Japan
Telephone Number for Information: 81-795-68-2320

Date Prepared: November 27, 2001
Signature of Prepare (optional): Kaoru Nagamine

Section II - Hazardous Ingredients/Identity Information

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS No.</th>
<th>WT%</th>
<th>OSHA TWA (mg/m³)</th>
<th>ACGIH TWA (mg/m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sr (oxide)</td>
<td>1314-11-0</td>
<td>0-6</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Zr (oxide)</td>
<td>1314-23-4</td>
<td>0-6</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Ti (oxide)</td>
<td>13463-67-7</td>
<td>0-5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Isoamyl acetate</td>
<td>123-92-2</td>
<td>1~30</td>
<td>-</td>
<td>532</td>
</tr>
<tr>
<td>1-Butanol</td>
<td>71-36-3</td>
<td>60-99</td>
<td>-</td>
<td>152</td>
</tr>
</tbody>
</table>

Section III - Physical/Chemical characteristics

Boiling Point: 117°C (as 1-Butanol)
Specific Gravity (H₂O=1): 0.81 (As 1-Butanol)
Vapor Pressure (Pa): 0.6kPa (at 20°C, as 1-Butanol)
Vapor Density (air=1): 4.3 (As 1-Butanol)
Solubility in Water: Soluble
Appearance and Odor: Yellow liquid with slight odor

Section IV - Fire and Explosion Hazard Data

Flash Point: 29°C (as 1-Butanol)
Flammable Limits: 1.4~11.2vol% (as 1-Butanol)
Extinguishing Media: Dry chemical, CO₂, foam
Special Fire Fighting Procedures: Use self-contained breathing apparatus
Unusual Fire and Explosion Hazards: Handle as a flammable liquid

Section V - Reactivity Data
### Stability: Stable  
**Condition to Avoid:** High temp.

### Incompatibility (Materials to Avoid): Ignition sources

### Hazardous Decomposition or Byproducts: CO on combustion

### Hazardous Polymerization: Will not occur  
**Condition to Avoid:** Not applicable

---

#### Section VI - Health Hazard Data

<table>
<thead>
<tr>
<th>Route(s) of Entry</th>
<th>Carcinogenicity: Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation? Yes</td>
<td>NTP? Unknown</td>
</tr>
<tr>
<td>Skin? Yes</td>
<td>IARC Monographs? Unknown</td>
</tr>
<tr>
<td>Ingestion? Yes</td>
<td>OSHA Regulated? Unknown</td>
</tr>
</tbody>
</table>

**Health Hazards (Acute and Chronic):**
- **Acute:** Headache, dizziness, nausea, eye irritation
- **Chronic:** De-fatting of the skin

**Signs and Symptoms of Exposure:** Headache, dizziness, nausea, eye irritation

**Medical Conditions Generally Aggravated by Exposure:** Unknown

**Emergency and First Aid Procedures**
- **Inhalation:** Remove to fresh air. Call a physician.
- **Eye:** Immediately flush eyes with plenty of water. Call a doctor.
- **Skin:** Wash with soap and water.

---

#### Section VII - Precautions for Safe Handling and Use

**Steps to Be Taken in Case Material is Released or Spilled:**
- Remove all sources of ignition.

**Waste Disposal Method:**
- Contact local industrial waste disposal company for disposal.

**Other Precautions:** Avoid exposure to vapors.

---

#### Section VIII - Control Measures

**Ventilation**
- **Local Exhaust:** Recommended  
  **Special:** Not applicable
- **Mechanical (General):** Desirable  
  **Other:** Not applicable

**Protective Gloves:**  
**Eye Protection:**
- **Rubber**  
- **Safety goggle**

**Other Protective Clothing or Equipment:**
- Protective clothing to prevent all body contact

**Work/Hygienic Practices:** Wash thoroughly after handling

---

#### Section IX - Additional Comments

**UN Number:** 1993 (Flammable Liquid)

---

believed to be accurate as of the date hereof. Mitsubishi Materials Corporation makes no warranty with respect hereto and disclaims all liability from reliance thereon.