1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Electrorheological fluid
Product Number: LID 3354D
Product Type: Adaptive fluid

This electrorheological fluid may be used for experimental and evaluation purposes only.

2. COMPOSITION, INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>CAS No.</th>
<th>% by wt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silicone oil</td>
<td>Proprietary</td>
<td>23</td>
</tr>
<tr>
<td><em>Lithium salt of resorcinol/</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Formalin</td>
<td>Proprietary</td>
<td>37.5</td>
</tr>
<tr>
<td>Chloro-fluoro polymer</td>
<td>9002-83-9</td>
<td>39.5</td>
</tr>
</tbody>
</table>

*Information on ingredients:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resorcinol</td>
<td>108-46-3</td>
</tr>
<tr>
<td>Lithium Hydroxide LiOH, hydrated form</td>
<td>1310-66-3</td>
</tr>
<tr>
<td>Formalin</td>
<td>50-00-0</td>
</tr>
</tbody>
</table>

Ingredients that have exposure limits

<table>
<thead>
<tr>
<th>Exposure limits (TWA)</th>
<th>ACGIH (TLV)</th>
<th>OSHA (PEL)</th>
<th>OTHER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingredients</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exposure limits (STEL)</th>
<th>ACGIH (TLV)</th>
<th>OSHA (PEL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ingredients</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. HAZARDS IDENTIFICATION

Toxicity: May cause mild eye irritation

When heated to temperatures above 300°F (150°C) in the presence of air, this product can form formaldehyde vapors. Formaldehyde is a potential cancer hazard and a known skin and respiratory sensitizer. Vapors irritate eyes, nose and throat. Safe handling conditions may be maintained by keeping vapor concentration below the OSHA permissible limit for formaldehyde.

Chlorotrifluoroethylene polymers decompose and depolymerise above 300°C. Decomposition products can be toxic and hazardous, and include hydrogen fluoride, hydrogen chloride, chlorotrifluoroethylene and other toxic organic fluorine compounds.
Primary route of entry: None known

Signs and symptoms of exposure: Irritation of the eyes

Existing Conditions aggravated by exposure: None known

Ingredients

<table>
<thead>
<tr>
<th>Literature referenced</th>
<th>Target Organ and Other Health effects</th>
<th>Carcinogen</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NTP</td>
</tr>
<tr>
<td></td>
<td></td>
<td>IARC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>OSHA</td>
</tr>
</tbody>
</table>

Silicone oil No data NO NO NO
Lithium salt of resorcinol/formaldehyde polymer No data NO NO NO
Chlorofluoro polymer No data NO NO NO

4. FIRST AID MEASURES

Ingestion: Do not induce vomiting. Keep individual calm. Obtain medical attention
Inhalation: Does not apply
Skin contact: Wash thoroughly with soap and water
Eye Contact: Flush eyes with directed stream of water for at least 15 minutes.

5. FIRE FIGHTING MEASURES

Flash Point: More than 200°F
Recommended Extinguishing Agents: Carbon dioxide, foam, dry chemical
Wear NIOSH/MSHA approved positive pressure self-contained breathing apparatus.

Hazardous Products formed by Fire or Thermal Decomp: Hydrogen fluoride, hydrogen chloride, chlorotrifluoroethylene, and trace amounts of other fluorine compounds.

Unusual Fire or Explosion Hazards: None
Explosive Limits:
- (% by volume in air) Lower: Not available
- (% by volume in air) Upper: Not available

6. ACCIDENTAL RELIEF MEASURES

Steps to be taken in case of spill or leak: Soak up with an inert absorbent. Store in partly filled, closed container until disposal.
7. HANDLING AND STORAGE

Safe Storage: Store below 100°F
Shelf Life: At least 3 years at 70°F
Handling: Avoid prolonged skin contact. Keep away from eyes.

8. EXPOSURE CONTROLS, PERSONAL PROTECTION

Eyes: Safety glasses or goggles
Skin: Rubber or plastic gloves
Ventilation: Does not apply

See Section 2 for Exposure Limits

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Brown liquid
Odor: Mild
Boiling Point: More than 300°F
pH: Does not apply
Solubility in Water: Insoluble
Specific Gravity: 1.47
Volatile Organic Compound (EPA Method 24) Not available
Vapor Pressure: Not available
Vapor Density: Not available
Evaporation Rate: Not available.

10. STABILITY AND REACTIVITY

Stability: Stable
Hazardous Polymerization: Will not occur
Incompatibility: Oxidizing agents, aluminum, magnesium, sodium potassium, amines, liquid fluorine, liquid chlorine trifluoride.

Hazardous Decomposition Products (non-thermal): None

11. TOXICOLOGICAL INFORMATION

See Section 3
12. ECOLOGICAL INFORMATION

No data available

13. DISPOSAL CONSIDERATIONS

Recommended methods of disposal:
- Incinerate following EPA and local regulations
- EPA Hazardous Waste Number NII - Not a RCRA Hazardous Waste Material

14. TRANSPORT INFORMATION

DOT (49 CFR 172)
- Domestic Ground Transport
  - Proper Shipping Name: Unrestricted
  - Hazard Class or Division: Unrestricted
  - Identification Number: None
  - Marine Pollutant: None

IATA
- Proper Shipping Name: Unrestricted
- Class or Division: Unrestricted
- UN or ID Number: None

15. REGULATORY INFORMATION

CA Proposition 65
- No California Proposition 65 chemicals are known to be present

16. OTHER INFORMATION

Estimated NFPA(R) Code:
- Health Hazard: 0
- Fire Hazard: 0
- Reactivity Hazard: 0
- Specific Hazard: Does not apply

Estimated HMIS(R) Code:
- Health Hazard: 0
- Flammability Hazard: 0
- Reactivity Hazards: 0
- Personal Protection: See Section 8

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HMIS is a registered trademark of the National Paint and Coatings Assn.

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