### 1. CORRECTIVE RESPONSE ACTIONS

<table>
<thead>
<tr>
<th>Single Word</th>
<th>Aliases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dilute and disperse</td>
<td>Cautionary Response Information</td>
</tr>
<tr>
<td>Chemical and Physical Treatment:</td>
<td>Neutralize</td>
</tr>
</tbody>
</table>

### 2. CHEMICAL DESIGNATIONS

<table>
<thead>
<tr>
<th>Subtitle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>CG Compatibility Group: 2; Sulfuric acid</td>
</tr>
<tr>
<td>2.2</td>
<td>Formula: H₂SO₄/H₂O</td>
</tr>
<tr>
<td>2.3</td>
<td>IMO/UN Designation: 8.01832</td>
</tr>
<tr>
<td>2.4</td>
<td>DOT ID No.: 1832</td>
</tr>
<tr>
<td>2.5</td>
<td>CAS Registry No.: Currently not available</td>
</tr>
<tr>
<td>2.6</td>
<td>NAERG Guide No.: 137</td>
</tr>
<tr>
<td>2.7</td>
<td>Standard Industrial Trade Classification: 52332</td>
</tr>
</tbody>
</table>

### 3. HEALTH HAZARDS

<table>
<thead>
<tr>
<th>Subtitle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Personal Protective Equipment: Chemical safety goggles and face shield, rubber gloves, boots, and apron.</td>
</tr>
<tr>
<td>3.2</td>
<td>Symptoms Following Exposure: Contact with eyes or skin causes severe burns, the severity depending on the strength of the acid. Ingestion can cause severe irritation of mouth and stomach.</td>
</tr>
<tr>
<td>3.3</td>
<td>Treatment of Exposure: Call a doctor. INGESTION: Do NOT induce vomiting. SKIN OR EYES: Flush affected parts with large amounts of water for at least 15 min.; do NOT use oils or ointments in eyes; treat burns.</td>
</tr>
<tr>
<td>3.4</td>
<td>TLV-TWA: Not listed.</td>
</tr>
<tr>
<td>3.5</td>
<td>TLV-STEL: Not listed.</td>
</tr>
<tr>
<td>3.6</td>
<td>TLV-Ceiling: Not listed.</td>
</tr>
<tr>
<td>3.7</td>
<td>Toxicity by Ingestion: No effects except those stemming from tissue damage.</td>
</tr>
<tr>
<td>3.8</td>
<td>Toxicity by Inhalation: Currently not available.</td>
</tr>
<tr>
<td>3.9</td>
<td>Chronic Toxicity: None.</td>
</tr>
<tr>
<td>3.10</td>
<td>Vapor (Gas) Irritant Characteristics: Non-volatile.</td>
</tr>
<tr>
<td>3.11</td>
<td>Liquid or Solid Characteristics: Severe skin irritant. Causes second- and third-degree burns on short contact and is very injurious to the eyes.</td>
</tr>
<tr>
<td>3.12</td>
<td>Odor Threshold: Odorless.</td>
</tr>
<tr>
<td>3.13</td>
<td>IDLH Value: Not listed.</td>
</tr>
<tr>
<td>3.14</td>
<td>OSHA PEL-TWA: Not listed.</td>
</tr>
<tr>
<td>3.15</td>
<td>OSHA PEL-STEL: Not listed.</td>
</tr>
<tr>
<td>3.16</td>
<td>OSHA PEL-Ceiling: Not listed.</td>
</tr>
<tr>
<td>3.17</td>
<td>EPA AEGL: Not listed.</td>
</tr>
</tbody>
</table>

### 4. FIRE HAZARDS

<table>
<thead>
<tr>
<th>Subtitle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Flash Point: Not flammable.</td>
</tr>
<tr>
<td>4.2</td>
<td>Flammable Limits in Air: Not flammable.</td>
</tr>
<tr>
<td>4.3</td>
<td>Fire Extinguishing Agents: Not pertinent.</td>
</tr>
<tr>
<td>4.4</td>
<td>Fire Extinguishing Agents Not to Be Used: Not pertinent.</td>
</tr>
<tr>
<td>4.5</td>
<td>Special Hazards of Combustion Products: Not pertinent.</td>
</tr>
<tr>
<td>4.6</td>
<td>Behavior in Fire: Not pertinent.</td>
</tr>
<tr>
<td>4.7</td>
<td>Auto Ignition Temperature: Currently not available.</td>
</tr>
<tr>
<td>4.8</td>
<td>Electrical Hazards: Not pertinent.</td>
</tr>
<tr>
<td>4.9</td>
<td>Burning Rate: Not flammable.</td>
</tr>
<tr>
<td>4.10</td>
<td>Adiabatic Flame Temperature: Currently not available.</td>
</tr>
<tr>
<td>4.11</td>
<td>Stoichiometric Air to Fuel Ratio: Not pertinent.</td>
</tr>
<tr>
<td>4.12</td>
<td>Flame Temperature: Currently not available.</td>
</tr>
</tbody>
</table>

### 5. CHEMICAL REACTIVITY

<table>
<thead>
<tr>
<th>Subtitle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>Reactivity with Water: None, unless strength is above 80-90%, in which case heat is liberated.</td>
</tr>
<tr>
<td>5.2</td>
<td>Reactivity with Common Materials: Attacks many metals, releasing flammable hydrogen gas.</td>
</tr>
<tr>
<td>5.3</td>
<td>Stability During Transport: Stable.</td>
</tr>
<tr>
<td>5.4</td>
<td>Neutralizing Agents for Acids and Caustics: Limestone, lime, or soda ash.</td>
</tr>
<tr>
<td>5.5</td>
<td>Polymerization: Not pertinent.</td>
</tr>
<tr>
<td>5.6</td>
<td>Inhibitor of Polymerization: Not pertinent.</td>
</tr>
</tbody>
</table>

### 6. WATER POLLUTION

<table>
<thead>
<tr>
<th>Subtitle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>Aquatic Toxicity: 24.5 ppm/24 hr/blug/Lt/still/fresh water 42.5 ppm/48 hr/prawn/Crustacean water</td>
</tr>
<tr>
<td>6.2</td>
<td>Waterfowl Toxicity: Currently not available.</td>
</tr>
<tr>
<td>6.3</td>
<td>Biological Oxygen Demand (BOD): None.</td>
</tr>
<tr>
<td>6.4</td>
<td>Food Chain Concentration Potential: None.</td>
</tr>
<tr>
<td>6.5</td>
<td>GESAMP Hazard Profile: Bioaccumulation: 0 Damage to living resources: 2 Human Oral hazard: 3 Human Contact hazard: 2, Redution of amenities: XX</td>
</tr>
</tbody>
</table>

### 7. SHIPPING INFORMATION

<table>
<thead>
<tr>
<th>Subtitle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>Grades of Purity: Purity depends on the process in which the original acid is used. The strength (in water) is probably below 80%, and the solution may contain a wide variety of metals and organic compounds in solution.</td>
</tr>
<tr>
<td>7.2</td>
<td>Storage Temperature: Ambient.</td>
</tr>
<tr>
<td>7.3</td>
<td>Inert Atmosphere: No requirement.</td>
</tr>
<tr>
<td>7.4</td>
<td>Venting: Open.</td>
</tr>
<tr>
<td>7.5</td>
<td>IMO Pollution Category: C.</td>
</tr>
<tr>
<td>7.6</td>
<td>Ship Type: 3.</td>
</tr>
<tr>
<td>7.7</td>
<td>Barge Hull Type: C.</td>
</tr>
</tbody>
</table>

### 8. HAZARD CLASSIFICATIONS

<table>
<thead>
<tr>
<th>Subtitle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>49 CFR Category: Corrosive material.</td>
</tr>
<tr>
<td>8.2</td>
<td>49 CFR Class: II.</td>
</tr>
<tr>
<td>8.3</td>
<td>49 CFR Package Group: II.</td>
</tr>
<tr>
<td>8.4</td>
<td>Marine Pollutant: No.</td>
</tr>
<tr>
<td>8.5</td>
<td>NFPA Hazard Classification:</td>
</tr>
<tr>
<td>8.6</td>
<td>Category Classification:</td>
</tr>
<tr>
<td>8.7</td>
<td>Health Hazard (Blue): 3</td>
</tr>
<tr>
<td>8.8</td>
<td>Flammability (Red): 0</td>
</tr>
<tr>
<td>8.9</td>
<td>Instability (Yellow): 2</td>
</tr>
</tbody>
</table>

### 9. PHYSICAL & CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Subtitle</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>Physical State at 15°C and 1 atm: Liquid</td>
</tr>
<tr>
<td>9.2</td>
<td>Molecular Weight: Not pertinent.</td>
</tr>
<tr>
<td>9.3</td>
<td>Boiling Point at 1 atm: 212°F = 100°C = 373 K.</td>
</tr>
<tr>
<td>9.4</td>
<td>Freezing Point: Not pertinent.</td>
</tr>
<tr>
<td>9.5</td>
<td>Critical Temperature: Not pertinent.</td>
</tr>
<tr>
<td>9.6</td>
<td>Critical Pressure: Not pertinent.</td>
</tr>
<tr>
<td>9.7</td>
<td>Specific Gravity: 1.39 at 20°C (liquid).</td>
</tr>
<tr>
<td>9.8</td>
<td>Liquid Surface Tension: Not pertinent.</td>
</tr>
<tr>
<td>9.9</td>
<td>Liquid Water Interfacial Tension: Not pertinent.</td>
</tr>
<tr>
<td>9.10</td>
<td>Vapor (Gas) Specific Gravity: Not pertinent.</td>
</tr>
<tr>
<td>9.11</td>
<td>Ratio of Specific Heats of Vapor (Gas): Not pertinent.</td>
</tr>
<tr>
<td>9.15</td>
<td>Heat of Solution: c = 418 Btu/lb = 232 cal/g × 5.71 x 10^-3 kg.</td>
</tr>
<tr>
<td>9.16</td>
<td>Heat of Polymerization: Not pertinent.</td>
</tr>
<tr>
<td>9.17</td>
<td>Heat of Fusion: Currently not available.</td>
</tr>
<tr>
<td>9.18</td>
<td>Limiting Value: Currently not available.</td>
</tr>
<tr>
<td>9.19</td>
<td>Reid Vapor Pressure: Currently not available.</td>
</tr>
</tbody>
</table>

### NOTES

- Use: Open
- No requirement
- Not pertinent
- Currently not available
- Not pertinent
- Currently not available
- Not pertinent
- Currently not available
- Currently not available
- Not pertinent
- Currently not available
- Not pertinent
- Currently not available
- Not pertinent
- Currently not available
- Not pertinent
<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>Pounds per cubic foot</th>
<th>Temperature (degrees F)</th>
<th>British thermal unit per pound-F</th>
<th>Temperature (degrees F)</th>
<th>British thermal unit inch per hour-square foot-F</th>
<th>Centipoise</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>87.820</td>
<td>52</td>
<td>0.580</td>
<td>N</td>
<td>O</td>
<td>T</td>
</tr>
<tr>
<td>50</td>
<td>87.580</td>
<td>54</td>
<td>0.580</td>
<td>O</td>
<td>O</td>
<td>T</td>
</tr>
<tr>
<td>60</td>
<td>87.339</td>
<td>56</td>
<td>0.580</td>
<td>P</td>
<td>P</td>
<td>E</td>
</tr>
<tr>
<td>70</td>
<td>87.089</td>
<td>58</td>
<td>0.580</td>
<td>E</td>
<td>E</td>
<td>R</td>
</tr>
<tr>
<td>80</td>
<td>86.849</td>
<td>60</td>
<td>0.580</td>
<td>R</td>
<td>R</td>
<td>T</td>
</tr>
<tr>
<td>90</td>
<td>86.610</td>
<td>62</td>
<td>0.580</td>
<td>T</td>
<td>T</td>
<td>I</td>
</tr>
<tr>
<td>100</td>
<td>86.360</td>
<td>64</td>
<td>0.580</td>
<td>I</td>
<td>I</td>
<td>N</td>
</tr>
<tr>
<td>110</td>
<td>86.120</td>
<td>66</td>
<td>0.580</td>
<td>N</td>
<td>N</td>
<td>E</td>
</tr>
<tr>
<td>120</td>
<td>85.879</td>
<td>68</td>
<td>0.580</td>
<td>E</td>
<td>E</td>
<td>N</td>
</tr>
<tr>
<td>130</td>
<td>85.639</td>
<td>70</td>
<td>0.580</td>
<td>T</td>
<td>T</td>
<td>T</td>
</tr>
<tr>
<td>140</td>
<td>85.389</td>
<td>72</td>
<td>0.580</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>150</td>
<td>85.150</td>
<td>74</td>
<td>0.580</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>160</td>
<td>84.910</td>
<td>76</td>
<td>0.580</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>170</td>
<td>84.669</td>
<td>78</td>
<td>0.580</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>180</td>
<td>84.419</td>
<td>80</td>
<td>0.580</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>190</td>
<td>84.179</td>
<td>82</td>
<td>0.580</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200</td>
<td>83.940</td>
<td>84</td>
<td>0.580</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>210</td>
<td>83.690</td>
<td>86</td>
<td>0.580</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>Pounds per 100 pounds of water</th>
<th>Temperature (degrees F)</th>
<th>Pounds per square inch</th>
<th>Temperature (degrees F)</th>
<th>Pounds per cubic foot</th>
<th>Temperature (degrees F)</th>
<th>British thermal unit per pound-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>O</td>
<td>N</td>
<td>O</td>
<td>T</td>
<td>P</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>T</td>
<td>T</td>
<td>P</td>
<td>E</td>
<td>R</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>P</td>
<td>R</td>
<td>T</td>
<td>I</td>
<td>N</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>E</td>
<td>T</td>
<td>I</td>
<td>N</td>
<td>E</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>Pounds per square inch</th>
<th>Temperature (degrees F)</th>
<th>Pounds per cubic foot</th>
<th>Temperature (degrees F)</th>
<th>British thermal unit per pound-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>O</td>
<td>N</td>
<td>O</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>T</td>
<td>P</td>
<td>E</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td></td>
<td>I</td>
<td>N</td>
<td>E</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Temperature (degrees F)</th>
<th>British thermal unit per pound-F</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>O</td>
</tr>
<tr>
<td>I</td>
<td>T</td>
</tr>
<tr>
<td>S</td>
<td>P</td>
</tr>
<tr>
<td>C</td>
<td>E</td>
</tr>
<tr>
<td>I</td>
<td>R</td>
</tr>
<tr>
<td>B</td>
<td>T</td>
</tr>
<tr>
<td>L</td>
<td>I</td>
</tr>
<tr>
<td>E</td>
<td>N</td>
</tr>
<tr>
<td>T</td>
<td>E</td>
</tr>
</tbody>
</table>

JUNE 1999