1. Identification

Product Name: Phenol Liquid
Cat No. : A931I-1, A931I-4, A931I-200, A931I-500
Synonyms: Carbolic acid; Hydroxybenzene; Phenyllic acid
Recommended Use: Laboratory chemicals.
Uses advised against: No Information available

Details of the supplier of the safety data sheet

Company: Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Emergency Telephone Number
CHEMTREC®, Inside the USA: 800-424-9300
CHEMTREC®, Outside the USA: 001-703-527-3887

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Flammable liquids</th>
<th>Corrosive to metals</th>
<th>Acute oral toxicity</th>
<th>Acute dermal toxicity</th>
<th>Acute Inhalation Toxicity - Vapors</th>
<th>Skin Corrosion/irritation</th>
<th>Serious Eye Damage/Eye Irritation</th>
<th>Germ Cell Mutagenicity</th>
<th>Specific target organ toxicity (single exposure)</th>
<th>Target Organs - Respiratory system, Central nervous system (CNS).</th>
<th>Specific target organ toxicity - (repeated exposure)</th>
<th>Target Organs - Liver, Kidney, Blood.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category 4</td>
<td>Category 1</td>
<td>Category 3</td>
<td>Category 3</td>
<td>Category 3</td>
<td>Category 1 B</td>
<td>Category 1</td>
<td>Category 2</td>
<td>Category 3</td>
<td>Category 3</td>
<td>Category 2</td>
<td>Category 2</td>
</tr>
</tbody>
</table>

Label Elements

Signal Word: Danger

Hazard Statements
Combustible liquid
May be corrosive to metals
Toxic if swallowed
Toxic in contact with skin
Toxic if inhaled
Causes severe skin burns and eye damage
Suspected of causing genetic defects
May cause respiratory irritation
May cause drowsiness or dizziness
May cause damage to organs through prolonged or repeated exposure

Precautionary Statements
Prevention
Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Use only outdoors or in a well-ventilated area
Do not breathe dust/fume/gas/mist/vapors/spray
Keep away from heat/sparks/open flames/hot surfaces. - No smoking
Keep cool
Response
Immediately call a POISON CENTER or doctor/physician
Inhalation
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
Skin
Wash contaminated clothing before reuse
IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
Eyes
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
Ingestion
Rinse mouth
Do NOT induce vomiting
Fire
In case of fire: Use CO2, dry chemical, or foam for extinction
Storage
Store locked up
Store in a well-ventilated place. Keep container tightly closed
Disposal
Dispose of contents/container to an approved waste disposal plant
Hazards not otherwise classified (HNOC)
None identified

3. Composition / information on ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>108-95-2</td>
<td>89</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>11</td>
</tr>
<tr>
<td>Oxalic acid dihydrate</td>
<td>6153-56-6</td>
<td>0.01</td>
</tr>
</tbody>
</table>

4. First-aid measures
Eye Contact
Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact
Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation
Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Immediate medical attention is required.

Ingestion
Do not induce vomiting. Call a physician or Poison Control Center immediately.

Most important symptoms/effects
Breathing difficulties. Causes burns by all exposure routes. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting; Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated; Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

Notes to Physician
Treat symptomatically

5. Fire-fighting measures

Suitable Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Cool closed containers exposed to fire with water spray.

Unsuitable Extinguishing Media
No information available

Flash Point
79.4 °C / 174.9 °F

Autoignition Temperature
715 °C / 1319 °F

Explosion Limits
Upper 8.6 vol %
Lower 1.8 vol %

Sensitivity to Mechanical Impact
No information available

Sensitivity to Static Discharge
No information available

Specific Hazards Arising from the Chemical
Combustible material. Risk of ignition. Containers may explode when heated.

Hazardous Combustion Products
Carbon monoxide (CO) Carbon dioxide (CO₂)

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

NFPA

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Instability</th>
<th>Physical hazards</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>2</td>
<td>0</td>
<td>N/A</td>
</tr>
</tbody>
</table>

6. Accidental release measures

Personal Precautions
Use personal protective equipment. Remove all sources of ignition. Ensure adequate ventilation. Avoid contact with skin, eyes and clothing. Take precautionary measures against static discharges.

Environmental Precautions
Avoid release to the environment. See Section 12 for additional ecological information. Do not flush into surface water or sanitary sewer system.

Methods for Containment and Clean Up
Remove all sources of ignition. Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal. Use spark-proof tools and explosion-proof equipment.
7. Handling and storage

Handling
Use only under a chemical fume hood. Wear personal protective equipment. Do not breathe vapors or spray mist. Do not get in eyes, on skin, or on clothing. Do not ingest. Keep away from open flames, hot surfaces and sources of ignition.

Storage
Keep containers tightly closed in a dry, cool and well-ventilated place. Keep away from heat and sources of ignition. Protect from moisture. Protect from light. Corrosives area.

8. Exposure controls / personal protection

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>TWA: 5 ppm Skin (Vacated) TWA: 5 ppm Skin (Vacated) TWA: 19 mg/m³ Skin</td>
<td>TWA: 5 ppm Skin TWA: 19 mg/m³ Skin Ceiling: 19.7 ppm Ceiling: 15.6 ppm Ceiling: 60 mg/m³ Ceiling: 7 mg/m³</td>
<td>IDLH: 250 ppm TWA: 5 ppm TWA: 19 mg/m³ Ceiling: 15.6 ppm Ceiling: 60 mg/m³ Ceiling: 7 mg/m³</td>
</tr>
<tr>
<td>Oxalic acid dihydrate</td>
<td>TWA: 1 mg/m³ STEL: 2 mg/m³</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Quebec</th>
<th>Mexico OEL (TWA)</th>
<th>Ontario TWA EV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>TWA: 5 ppm Skin TWA: 19 mg/m³ Skin</td>
<td>TWA: 5 ppm Skin TWA: 19 mg/m³ STEL: 10 ppm STEL: 38 mg/m³</td>
<td>TWA: 5 ppm Skin</td>
</tr>
</tbody>
</table>

Legend
ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: The National Institute for Occupational Safety and Health Immediately Dangerous to Life or Health

Engineering Measures
Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/face Protection
Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection
Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection
Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

9. 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>Colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>sweet</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
<tr>
<td>pH</td>
<td>6</td>
</tr>
<tr>
<td>Melting Point/Range</td>
<td>42.8 °C / 109 °F</td>
</tr>
<tr>
<td>Boiling Point/Range</td>
<td>182 °C / 359.6 °F</td>
</tr>
<tr>
<td>Flash Point</td>
<td>79.4 °C / 174.9 °F</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>&lt; 0.01 (Butyl Acetate = 1.0)</td>
</tr>
</tbody>
</table>
Flammability (solid,gas) Not applicable
Flammability or explosive limits
  Upper 8.6 vol %
  Lower 1.8 vol %
Vapor Pressure .35 mmHg @ 25 °C
Vapor Density 3.2
Specific Gravity 1.0576
Solubility Slightly soluble in water
Partition coefficient; n-octanol/water No data available
Autoignition Temperature 715 °C / 1319 °F
Decomposition Temperature No information available
Viscosity No information available
Molecular Formula C6H5OH
Molecular Weight 94.1

### 10. Stability and reactivity

**Reactive Hazard**
None known, based on information available

**Stability**
Hygroscopic. Light sensitive.

**Conditions to Avoid**

**Incompatible Materials**
Acids, Bases, Strong oxidizing agents, Halogens, lead, Metals

**Hazardous Decomposition Products**
Carbon monoxide (CO), Carbon dioxide (CO₂)

**Hazardous Polymerization**
Hazardous polymerization does not occur.

**Hazardous Reactions**
None under normal processing.

### 11. Toxicological information

**Acute Toxicity**

**Product Information**

<table>
<thead>
<tr>
<th></th>
<th>Oral LD50</th>
<th>Dermal LD50</th>
<th>Vapor LC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
<td>Category 3. ATE = 50 - 300 mg/kg.</td>
<td>Category 3. ATE = 200 - 1000 mg/kg.</td>
<td>Based on ATE data, the classification criteria are not met. ATE &gt; 20 mg/l.</td>
</tr>
</tbody>
</table>

**Component Information**

<table>
<thead>
<tr>
<th>Component</th>
<th>LD50 Oral (Rat)</th>
<th>LD50 Dermal (Rabbit)</th>
<th>LC50 Inhalation (Rat) 4 h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>LD50 = 340 mg/kg</td>
<td>LD50 = 317 mg/kg</td>
<td>LC50 = 316 mg/m³</td>
</tr>
<tr>
<td>Water</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Oxalic acid dihydrate</td>
<td>LD50 = 375 mg/kg</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

**Toxicologically Synergistic Products**
No information available

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Irritation**
Causes burns by all exposure routes

**Sensitization**
No information available

**Carcinogenicity**
The table below indicates whether each agency has listed any ingredient as a carcinogen.
**Oxalic acid dihydrate**

<table>
<thead>
<tr>
<th>IARC: (International Agency for Research on Cancer)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1 - Carcinogenic to Humans</td>
</tr>
<tr>
<td>Group 2A - Probably Carcinogenic to Humans</td>
</tr>
<tr>
<td>Group 2B - Possibly Carcinogenic to Humans</td>
</tr>
</tbody>
</table>

**Mutagenic Effects**
Possible risk of irreversible effects

**Reproductive Effects**
Experiments have shown reproductive toxicity effects on laboratory animals.

**Developmental Effects**
No information available.

**Teratogenicity**
No information available.

**STOT - single exposure**
Respiratory system Central nervous system (CNS)

**STOT - repeated exposure**
Liver Kidney Blood

**Aspiration hazard**
No information available

**Symptoms / effects, both acute and delayed**
Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation

**Endocrine Disruptor Information**
No information available

**Other Adverse Effects**
The toxicological properties have not been fully investigated.

### 12. Ecological information

**Ecotoxicity**
Do not empty into drains.

<table>
<thead>
<tr>
<th>Component</th>
<th>Freshwater Algae</th>
<th>Freshwater Fish</th>
<th>Microtox</th>
<th>Water Flea</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>EC50: 187 - 279 mg/L, 72h static (Desmodesmus subspicatus) EC50: 0.0188 - 0.1044 mg/L, 96h static (Pseudokirchneriella subcapitata) EC50: = 46.42 mg/L, 96h (Pseudokirchneriella subcapitata)</td>
<td>4-7 mg/L LC50 96 h 32 mg/L LC50 96 h</td>
<td>450 21 - 36 mg/L, 30 min EC50 = 23.28 mg/L 5 min EC50 = 25.61 mg/L 15 min EC50 = 28.8 mg/L 5 min EC50 = 31.6 mg/L 15 min</td>
<td>EC50: 10.2 - 15.5 mg/L, 48h (Daphnia magna) EC50: 4.24 - 10.7 mg/L, 48h (Daphnia magna)</td>
</tr>
</tbody>
</table>

**Persistence and Degradability**
May persist based on information available.

**Bioaccumulation/ Accumulation**
No information available.

**Mobility**
Is not likely mobile in the environment due to its low water solubility.

<table>
<thead>
<tr>
<th>Component</th>
<th>log Pow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>1.47</td>
</tr>
</tbody>
</table>

### 13. Disposal considerations

**Waste Disposal Methods**
Chemical waste generators must determine whether a discarded chemical is classified as hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

<table>
<thead>
<tr>
<th>Component</th>
<th>RCRA - U Series Wastes</th>
<th>RCRA - P Series Wastes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol - 108-95-2</td>
<td>U188</td>
<td>-</td>
</tr>
</tbody>
</table>

### 14. Transport information

**DOT**
15. Regulatory information

International Inventories

<table>
<thead>
<tr>
<th>Component</th>
<th>TSCA</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>ELINCS</th>
<th>NLP</th>
<th>PICCS</th>
<th>ENCS</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>203-632-7</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Water</td>
<td>X</td>
<td>-</td>
<td>-</td>
<td>231-791-2</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
<tr>
<td>Oxalic acid dihydrate</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
</tr>
</tbody>
</table>

Legend:
X - Listed
E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
P - Indicates a commenced PMN substance
R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B).
Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No</th>
<th>Weight %</th>
<th>SARA 313 - Threshold Values %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>108-95-2</td>
<td>89</td>
<td>1.0</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazard Categories

- Acute Health Hazard: Yes
- Chronic Health Hazard: Yes
- Fire Hazard: Yes
- Sudden Release of Pressure Hazard: No
- Reactive Hazard: No

CWA (Clean Water Act)

<table>
<thead>
<tr>
<th>Component</th>
<th>CWA - Hazardous</th>
<th>CWA - Reportable</th>
<th>CWA - Toxic Pollutants</th>
<th>CWA - Priority Pollutants</th>
</tr>
</thead>
</table>
### Substances

<table>
<thead>
<tr>
<th>Component</th>
<th>Quantities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>X 1000 lb</td>
</tr>
</tbody>
</table>

### Clean Air Act

<table>
<thead>
<tr>
<th>Component</th>
<th>HAPS Data</th>
<th>Class 1 Ozone Depletors</th>
<th>Class 2 Ozone Depletors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### OSHA

Occupational Safety and Health Administration

Not applicable

### CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

<table>
<thead>
<tr>
<th>Component</th>
<th>Hazardous Substances RQs</th>
<th>CERCLA EHS RQs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>1000 lb</td>
<td>1000 lb</td>
</tr>
</tbody>
</table>

### California Proposition 65

This product does not contain any Proposition 65 chemicals

### U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Water</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Oxalic acid dihydrate</td>
<td>-</td>
<td>-</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>

### U.S. Department of Transportation

Reportable Quantity (RQ): Y

DOT Marine Pollutant: N

DOT Severe Marine Pollutant: N

### U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

### Other International Regulations

#### Mexico - Grade

Moderate risk, Grade 2

#### Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

**WHMIS Hazard Class**

- B3  Combustible liquid
- D1A Very toxic materials
- E  Corrosive material

### 16. Other information

Prepared By

Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com

Creation Date

21-Dec-2010
This document has been updated to comply with the US OSHA HazCom 2012 Standard replacing the current legislation under 29 CFR 1910.1200 to align with the Globally Harmonized System of Classification and Labeling of Chemicals (GHS).

Disclaimer
The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered 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 materials or in any process, unless specified in the text.

End of SDS