





## Safety Data Sheet

| Section 1. Identification                       |  |
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| <b>Product Identification and Item Numbers:</b> | Liquefied Phenol, USP (Phenol/1, Phenol/2, Phenol/PT)  |
| <b>Product Description:</b>                     | Contains not less than 89.0% Phenol  |
| <b>Recommended use and restrictions on use:</b> | N/A  |
| <b>Supplier:</b>                                | Delasco<br>608 13 <sup>th</sup> Avenue<br>Council Bluffs, IA 51501<br>1-712-323-3269<br><a href="http://www.delasco.com">www.delasco.com</a><br><a href="mailto:questions@delasco.com">questions@delasco.com</a> |
| <b>In Case of Emergency, Contact:</b>           | Chemtrec (24 hour) 1-800-424-9300  |

| Section 2. Hazard(s) Identification  |  |  |  |
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| <b>Classification:</b>   |  |  |  |
| Acute toxicity, Oral (Category 4)<br>Acute toxicity, Dermal (Category 3)<br>Acute toxicity, Inhalation (Category 3)<br>Skin corrosion / irritation (Category 1B)<br>Serious eye damage / eye irritation (Category 1)<br>Germ cell mutagenicity (Category 2)<br>Specific target organ toxicity – repeated (Category 2)  |  |  |  |
| <b>Labeling:</b>   |  |  |  |
| <b>Hazard symbol(s):</b>   |  |  |  |
| <br>GHS09: environment   | <br>GHS05: corrosion | <br>GHS06: skull and crossbones | <br>GHS08: health hazard |
| <b>Signal word:</b> Danger   |  |  |  |
| <b>Hazard statements:</b>  |  |  |  |
| H301: Toxic if swallowed.<br>H311: Toxic in contact with skin.<br>H331: Toxic if inhaled.<br>H314: Causes severe skin burns and eye damage.<br>H341: Suspected of causing genetic defects.<br>H373: May cause damage to organs through prolonged or repeated exposure. Affected organs: kidney, liver, skin, nervous system.   |  |  |  |
| <b>Precautionary statements:</b>   |  |  |  |
| Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.<br>Use respiratory protection and other personal protective equipment as required.<br>Wash face, hands and any exposed skin thoroughly after handling.<br>Do not eat, drink or smoke when using this product.<br>Use only outdoors or in a well-ventilated area. Do not breathe dust/fume/gas/mist/vapors/spray.<br>IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.<br>Continue rinsing. Immediately call a POISON CENTER or doctor/physician.<br>IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower Wash contaminated clothing before reuse.<br>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician.<br>IF SWALLOWED: Call a poison center or doctor/physician if you feel unwell. Rinse mouth. Do not induce vomiting.<br>Store locked up and in a well-ventilated place. Keep container tightly closed.<br>Dispose of contents/container to an approved waste disposal plant. |  |  |  |

| <b>Section 3. Composition/Information on Ingredients</b> |  |
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| <b>Chemical Name and Concentration:</b>                  | Phenol, 88 - 91%<br>Water, 9 - 12%           |
| <b>Other Names, Common Names, Synonyms:</b>              | Carbolic acid, Phenic acid, Hydroxybenzene   |
| <b>CAS Number, other unique identifiers:</b>             | Phenol CAS# 108-95-2<br>Water CAS# 7732-18-5 |
| <b>Other classified impurities or stabilizers:</b>       | N/A  |
| <b>Other ingredients posing health hazards:</b>          | N/A  |
| <b>Concentration of other hazardous ingredients:</b>     | N/A  |

| <b>Section 4. First-aid Measures</b> |  |
|--------------------------------------|--|
| <b>Inhalation exposure:</b>          | Move the exposed person to fresh air at once. If breathing has stopped, perform artificial respiration. 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. Administer oxygen if breathing is difficult. Keep the affected person warm and at rest. Get medical attention as soon as possible. |
| <b>Skin exposure:</b>                | Wash off immediately with soap and plenty of water. Continue flushing with plenty of water for at least 15 minutes. Remove all contaminated clothes and shoes. Immediate medical attention is required. Call a physician immediately.  |
| <b>Eye contact:</b>                  | Flush eye with water for 15 minutes. Immediate medical attention is required. Call a physician immediately.  |
| <b>Ingestion:</b>                    | Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Immediate medical attention is required. Call a physician or Poison Control Centre immediately.  |

| <b>Section 5. Fire Fighting Measures</b>  |  |
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| <b>Suitable / unsuitable extinguishing media:</b>                                   | Dry chemical. Carbon dioxide (CO <sub>2</sub> ). Water spray mist or foam. Alcohol-resistant foam.   |
| <b>Specific hazards / combustion products:</b>                                      | Specific Hazards: Combustible material. Containers may explode when heated. Contact with metals may evolve flammable hydrogen gas. When heated, vapors may form explosive mixtures with air: indoors, outdoors and sewers explosion hazards.<br>Combustion Products: Carbon monoxide; Carbon dioxide                                     |
| <b>Special protective equipment and precautions for fire-fighters:</b>              | Dike fire-control water for later disposal; do not scatter the material. For larger fires, use water spray or fog. Cool containers with flooding quantities of water until well after fire is out. As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear |
| <b>NFPA Hazard Classification</b><br>(Fire Protection Guide to Hazardous Materials) | Health - 3<br>Flammability - 2<br>Instability - 0  |
|   | 0-Minimal<br>1-Slight<br>2-Moderate<br>3-Serious<br>4-Severe   |

| <b>Section 6. Accidental Release Measures</b>         |   |
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| <b>Personal precautions and protective equipment:</b> | Keep people away from and upwind of spill/leak. Ensure adequate ventilation. Remove all sources of ignition. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Use personal protective equipment. Avoid contact with skin, eyes and clothing. |
| <b>Environmental Precautions:</b>                     | Prevent further leakage or spillage if safe to do so. Prevent entry into waterways, sewers, basements or confined areas. Do not let product enter drains. Should not be released into the environment.  |
| <b>Containment / clean up methods:</b>                | Stop leak if you can do it without risk. Absorb spill with inert material (e.g. vermiculite, dry sand or earth). Use appropriate tools to put the spilled material in a suitable chemical waste disposal container. Use only non-sparking tools. Clean contaminated surface thoroughly.         |

| <b>Section 7. Handling and Storage</b> |  |
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| <b>Precautions for safe handling:</b>  | Use only in area provided with appropriate exhaust ventilation. Keep away from open flames, hot surfaces and sources of ignition. Keep away from incompatible materials. Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not ingest. Do not breathe vapors or spray mist. Keep away from heat and sources of ignition. Handle in accordance with good industrial hygiene and safety practice. |
| <b>Conditions for safe storage:</b>    | Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Protect from light. Sensitive to light. Store in light-resistant containers. Store in a segregated and approved area. Store away from incompatible materials.   |
| <b>Incompatibilities to avoid:</b>     | Oxidizing agents. Metals. Acids. Bases. isocyanates. nitrides. Acetaldehyde. amides. Formaldehyde. aliphatic amines.   |

| <b>Section 8. Exposure Controls and Personal Protection</b> |  |
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| <b>OSHA Permissible Exposure Limit (PEL):</b>               | 5 ppm TWA<br>19 mg/m <sup>3</sup> TWA  |
| <b>Threshold Limit Value (TLV):</b>                         | Not Available  |
| <b>Other exposure limits:</b>                               | NIOSH:<br>5 ppm TWA<br>19 mg/m <sup>3</sup> TWA<br>15.6 ppm Ceiling 15 min<br>60 mg/m <sup>3</sup> Ceiling 15 min<br><br>ACGIH:<br>5 ppm TWA   |
| <b>Engineering controls:</b>                                | Ensure adequate ventilation. Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors and mist below their respective threshold limit value.  |
| <b>Personal protective equipment:</b>                       | <b>Respiratory Protection</b><br>Vapor respirator. Be sure to use an approved/certified respirator or equivalent.<br><b>Eye Protection</b><br>Face-shield.<br><b>Skin Protection</b><br>Chemical resistant protective suit. Gloves. Boots. |
| <b>Other personal protection measures:</b>                  | Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands and face before breaks and immediately after handling the product.  |

| <b>Section 9. Physical and Chemical Properties</b>     |   |
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| <b>Appearance (physical state, color, etc.):</b>       | Colorless to light-pink or light yellow liquid. |
| <b>Odor:</b>   | Sweet, acrid odor.                              |
| <b>Odor threshold:</b>                                 | Data not available                              |
| <b>pH:</b>   | Data not available                              |
| <b>Melting point / freezing point:</b>                 | Data not available for solutions of phenol      |
| <b>Initial boiling point and boiling range:</b>        | Data not available                              |
| <b>Flash point:</b>                                    | Data not available                              |
| <b>Evaporation rate:</b>                               | Data not available                              |
| <b>Flammability</b>                                    | Data not available                              |
| <b>Upper / lower flammability or explosive limits:</b> | Data not available                              |
| <b>Vapor Pressure:</b>                                 | Data not available                              |
| <b>Vapor density:</b>                                  | Data not available                              |
| <b>Relative density:</b>                               | Data not available                              |
| <b>Solubility:</b>                                     | Data not available                              |
| <b>Partition coefficient: n-octanol/water:</b>         | Data not available                              |
| <b>Auto-ignition temperature:</b>                      | Data not available                              |
| <b>Decomposition temperature:</b>                      | Data not available                              |
| <b>Viscosity:</b>                                      | Data not available                              |

| <b>Section 10. Stability and Reactivity</b>              |  |
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| <b>Chemical stability:</b>                               | <p><b>Stability:</b><br/>Stable at normal conditions.</p> <p><b>Reactivity:</b><br/>Contact of phenol with peroxodisulfuric acid may cause explosion. The combination of phenol with acetaldehyde results in violent condensation. The combination of phenol with 1,3-butadiene, and born trifluoride diethyl ether complex results in an intense exothermic reaction. The combination of phenol with isocyanates results in heat generation and violent polymerization. The combination of phenol with nitrides results in heat and flammable gas generation. Violent reaction with aluminum chloride and nitromethane at 110 deg. C. Hot phenol reacts with metals. A combination of phenol with mineral oxidizing acids results in fire. Violent reaction with phenol and aluminum chloride + nitrobenzene at 120 deg. C. Potential for an explosive reaction exists when phenol comes into contact with formaldehyde or sodium nitrate + trifluoroacetic acid. Mixtures of air and 3-10% phenol are explosive. Phenol + sodiuim nitrite causes explosion on heating. When heated, phenol evolves flammable vapors which will form explosive mixtures with air. Phenol + calcium hypochlorite results in an exothermic reaction producing toxic fumes which may ignite.</p> |
| <b>Possibility of hazardous reactions:</b>               | Hazardous polymerization does not occur.   |
| <b>Conditions to avoid (static, shock, vibration...)</b> | Heat. Ignition sources. Exposure to light. Turns pink or red on exposure to light. Incompatible materials.   |
| <b>Incompatible materials:</b>                           | Oxidizing agents. Metals. Acids. Bases. isocyanates. nitrides. Acetaldehyde. amides. Formaldehyde. aliphatic amines.   |
| <b>Hazardous decomposition products:</b>                 | Carbon monoxide. Carbon dioxide.   |

| <b>Section 11. Toxicological Information</b> |   |
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| <b>Routes of exposure:</b>                   | Skin, inhalation, Ingestion   |
| <b>Acute Symptoms (acute):</b>               | <ul style="list-style-type: none"> <li>• <b>Inhalation:</b> Severely irritating to the upper respiratory tract. It can irritate the lungs. It may cause pulmonary edema. Can cause dyspnea (shortness of breath and difficulty breathing). May affect respiration (respiratory depression). May affect behavior/central nervous system (somniaence). Inhalation of large amounts of vapor may be fatal. Volatility is low at room temperature, but hazard increases as temperature rises. Harmful contamination of the air will be reached rather slowly on evaporation of this substance at 20 deg. C. Inhalation of large quantities can cause system effects similar to that of ingestion.</li> <li>• <b>Eye Contact:</b> Causes eye burns. Corrosive to the eyes and may cause severe damage including blindness.</li> <li>• <b>Skin Contact:</b> Causes skin burns. Phenol burns may be severe, but painless due to damage to the nerve endings causing numbness. The skin may turn white and opaque or dull gray and wrinkled. Later, it may turn gray-white or yellowish brown and may be deeply eroded and scarred. Black Gangrene may occur at the sight of contact. It may be absorbed through the skin. If absorbed through skin it may cause systemic effects. Toxic in contact with skin. If absorbed through the skin it may affect behavior/central nervous system and cause central nervous system effects. If absorbed through the skin, it may affect the liver and kidneys (nephritis, hematuria) and may induce cardiac arrhythmias.</li> <li>• <b>Ingestion:</b> Harmful if swallowed. Causes digestive or gastrointestinal tract burns. Corrosive to the mouth, throat, and stomach. There is burning pain in the mouth and throat as well as white necrotic lesions in the mouth, esophagus and stomach. Ingestion may cause nausea, vomiting, diarrhea. May cause loss of appetite. May cause abdominal pain. May cause gastrointestinal bleeding. May cause pallor. May cause excessive sweating. May cause hemolytic anemia. May cause metabolic acidosis. May affect the cardiovascular system (hypotension). May cause methemoglobinemia, (the formation of methemoglobin in the blood which causes deficient oxygenation of the blood due to decreased available hemoglobin). Signs and symptoms of methemoglobinemia</li> </ul> |

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|   | include shortness of breath, cyanosis (a bluish discoloration of the mucous membranes and unpigmented areas of the body), mental status changes such as headache, mental impairment, fatigue, muscular weakness, exercise intolerance, lightheadness, dizziness, incoordination, seizures, and loss of consciousness. Arterial blood with elevated methemoglobin levels has a characteristic chocolate-brown color as compared to normal bright red oxygen containing arterial blood. Severe methemoglobinemia is characterized by bradycardia or tachycardia (slow or fast heart beat), dysrhythmias, seizures, coma and death. It may cause central nervous system depression. May affect behavior/central nervous system (convulsions). May affect behavior/central nervous system (tremors). May affect behavior/central nervous system (dizziness, headache). May affect behavior/central nervous system (hallucinations, drowsiness, nervousness, twitching, delirium). May affect respiration (dyspnea - difficulty breathing and shortness of breath). May affect respiration (tachypnea (rapid breathing)). May cause tinnitus. May cause pupillary dilation. May affect eyes (pinpoint pupils). May cause dim vision. May affect urinary system (kidneys). May affect liver . |
| <b>Symptoms (chronic):<br/>Chronic effects from short and long term exposure:</b> | Prolonged or repeated inhalation may cause bronchitis with coughing, phlegm, and/or shortness of breath. Prolonged or repeated ingestion may affect the liver, and kidneys. Prolonged or repeated ingestion may affect the liver (jaundice, liver function tests impaired). Prolonged or repeated ingestion may affect the blood (changes in red blood cell count). Prolonged or repeated ingestion may affect behavior/central nervous system. Prolonged or repeated ingestion may affect the cardiovascular system. Prolonged or repeated ingestion may affect the brain. Prolonged or repeated inhalation may affect the liver. Prolonged or repeated inhalation may affect the kidneys. Prolonged or repeated inhalation may affect the cardiovascular system. Prolonged or repeated ingestion may affect the blood (anemia). Prolonged or repeated inhalation may affect the blood (changes in serum composition). Signs and symptoms of chronic inhalation exposure may include headache, cough, weakness, fatigue, anorexia, vomiting, insomnia, nervousness, weight loss, paresthesia, ochronosis, and albuminuria. Other signs and symptoms of chronic exposure to phenol include vertigo, muscle aches and weakness, dark urine, nephritis, and hepatitis.                    |
| <b>Numerical measures of toxicity (e.g., acute toxicity estimates):</b>           | Acute Toxicity:<br>The following values are calculated based on chapter 3.1 of the GHS document:<br>ATEmix (oral) 360mg/kg<br>ATEmix (dermal) 716mg/kg<br>ATEmix (inhalation-gas) 795mg/l<br>ATEmix (inhalation-dust/mist) 0.6mg/l<br>ATEmix (inhalation-vapor) 0.4mg/l<br><br>LD50/oral/rat = 317mg/kg<br>LD50/oral/mouse = 270 mg/kg<br>LD50/dermal/rabbit = 630 mg/kg Dermal LD50 Rabbit<br>LD50/dermal/rat = 525 mg/kg Dermal LD50 Rat 669 mg/kg<br>LC50/inhalation/rat = 316 mg/m <sup>3</sup> 4 h<br>LC50/inhalation/mouse = No information available<br>Other LD50 or LC50 information = No information available<br><br>Mutagenic Effects:<br>May affect genetic material. Animal experiments showed mutagenic effects. Mutagenic effects in mammalian somatic cells. Experiments with human lymphocytes have shown mutagenic effects. Experiments with animal lymphocytes have shown mutagenic effects. Mutations in microorganisms.   |
| <b>NTP carcinogen:</b>  | Not listed  |
| <b>EPA carcinogen:</b>  | Not available   |
| <b>ACGIH carcinogen:</b>  | A4 Not Classifiable as a Human Carcinogen   |
| <b>IARC potential carcinogen:</b>   | Group 3- Monograph 71 [1999] Monograph 47 [1989]  |
| <b>OSHA carcinogen:</b>   | Not listed  |

| <b>Section 12. Ecological Information (Non-mandatory)</b>      |  |
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| <b>Ecotoxicity (aquatic and terrestrial, where available):</b> | <p>Freshwater Algae Data:<br/>           0.0188 - 0.1044 mg/L EC50 Pseudokirchneriella subcapitata 96 h<br/>           187 - 279 mg/L EC50 Desmodesmus subspicatus 72 h<br/>           46.42 mg/L EC50 Pseudokirchneriella subcapitata 96 h</p> <p>Freshwater Fish Species Data:<br/>           11.9 - 25.3 mg/L LC50 Lepomis macrochirus 96 h flow-through 1<br/>           11.9 - 50.5 mg/L LC50 Pimephales promelas 96 h flow-through 1<br/>           20.5 - 25.6 mg/L LC50 Pimephales promelas 96 h static 1<br/>           23.4 - 36.6 mg/L LC50 Oryzias latipes 96 h static 1<br/>           33.9 - 43.3 mg/L LC50 Oryzias latipes 96 h flow-through 1<br/>           34.09 - 47.64 mg/L LC50 Poecilia reticulata 96 h static 1<br/>           4.23 - 7.49 mg/L LC50 Oncorhynchus mykiss 96 h semi-static 1<br/>           5.0 - 12.0 mg/L LC50 Oncorhynchus mykiss 96 h 1<br/>           5.449 - 6.789 mg/L LC50 Oncorhynchus mykiss 96 h flow-through 1<br/>           7.5 - 14 mg/L LC50 Oncorhynchus mykiss 96 h static 1<br/>           0.00175 mg/L LC50 Cyprinus carpio 96 h semi-static 1<br/>           11.5 mg/L LC50 Lepomis macrochirus 96 h semi-static 1<br/>           13.5 mg/L LC50 Lepomis macrochirus 96 h static 1<br/>           27.8 mg/L LC50 Brachydanio rerio 96 h 1<br/>           31 mg/L LC50 Poecilia reticulata 96 h semi-static 1<br/>           32 mg/L LC50 Pimephales promelas 96 h 1</p> <p>Water Flea Data:<br/>           10.2 - 15.5 mg/L EC50 Daphnia magna 48 h<br/>           4.24 - 10.7 mg/L EC50 Daphnia magna 48 h</p> |
| <b>Persistence and degradability:</b>                          | Rapid degradation through multiple pathways in environmental media. If released to the environment, phenol's primary removal mechanism is biodegradation which is generally rapid (days). If phenol is released to soil, it will readily leach and biodegrade. Biodegradation in soil is generally rapid with half-lives of under 5 days even in subsurface soils.   |
| <b>Bioaccumulative potential:</b>                              | Phenol does not bioconcentrate in aquatic organisms.   |
| <b>Mobility in soil:</b>                                       | The biodegradation in soil is generally rapid with half-lives of under 5 days even in subsurface soils.  |
| <b>Other adverse effects:</b>                                  | No data available.   |

| <b>Section 13. Disposal Considerations (Non-mandatory)</b> |   |
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| <b>Safe methods of disposal:</b>                           | Waste must be disposed of in accordance with Federal, State and Local regulation. Empty containers should be taken for local recycling, recovery or waste disposal. |

| <b>Section 14. Transport Information (Non-mandatory)</b> |                   |         |                  |     |                          |
|--|-------------------|---------|------------------|-----|--------------------------|
| <b>US DOT</b>  | <b>UN number:</b> | UN 2821 | <b>Class:</b>    | 6.1 | <b>Packing Group:</b> II |
| <b>UN proper shipping name:</b>                          |                   |         | Phenol Solutions |     |                          |
| <b>Packing group, if applicable:</b>                     |                   |         | PG: II           |     |                          |
| <b>Environmental hazards (marine, etc...)</b>            |                   |         | N/A              |     |                          |
| <b>Special transport precautions:</b>                    |                   |         | N/A              |     |                          |

| <b>Section 15. Regulatory Information (Non-mandatory)</b>      |     |
|--|-----|
| <b>Specific safety, health, and environmental regulations:</b> | N/A |

| <b>Section 16. Other information</b>         |              |
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| <b>Date of preparation or last revision:</b> | May 28, 2015 |