P-CRESOL

CSO

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
4-Hydroxytoluene
p-Methylhydroxybenzene
p-Methylphenol
p-Toluol

Solid | Colorless | Tarlike odor

Sinks and mixes slowly with water.

Keep people away. Avoid contact with liquid.
Avoid inhalation.
Wear goggles, self-contained breathing apparatus, and rubber overclothing (including gloves).
Shut off ignition sources and call fire department.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

Combustible.
POISONOUS GASES MAY BE PRODUCED IN FIRE.
Wear goggles and self-contained breathing apparatus.
Extinguish with water, dry chemical, foam or carbon dioxide.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

LIQUID
Will burn skin and eyes.
Poisonous if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk, and have victim induce vomiting.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
Stop discharge
Contain
Collection Systems: Pump; Dredge
Chemical and Physical Treatment:
Neutralize
Do not burn
Clean shore line

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 21; Phenols, cresols
2.2 Formula: $CH_3C_6H_4OH$
2.3 IMO/UN Designation: 6.1/2076.
2.4 DOT ID No.: 2076.
2.5 CAS Registry No.: 106-44-5
2.6 NAERG Guide No.: 153
2.7 Standard Industrial Trade Classification: 51242

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Chemical goggles, full protective clothing including boots and gloves, self-contained breathing apparatus.

3.2 Symptoms Following Exposure: INHALATION: Irritation of nose or throat. EYES: Intense irritation and pain, swelling of conjunctiva and corneal damage may occur. SKIN: Intense burning, loss of feeling, white discoloration and softening. Gangrene may occur. INGESTION: Burning sensation in mouth and esophagus. Vomiting may result. Absorption by all routes may cause muscular weakness, gastroenteric disturbance, severe depression and collapse. Effects are primarily on central nervous system, edema of lungs, injury of spleen and pancreas may occur.

3.3 Treatment of Exposure: Call a physician. INHALATION: Move to fresh air. Irritation of nose or throat may be relieved to some extent by spraying or gargling with water until odor disappears. For respiratory distress adminster oxygen. EYES: Irrigate with copious quantities of running water for at least 15 min. SKIN: Remove contaminated clothing. Wash with soap and water until all cresol odor disappears. Follow with alcohol or glycerin (20% solution) wash. Follow with water. INGESTION: Dilute with large quantities of liquid (salt water, weak sodium bicarbonate solution, milk or gruel). Follow with demulcent such as raw egg white or corn starch paste. Induce vomiting.

3.4 TLV-TWA: 5 ppm.
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 Toxicity by Ingestion: Grade 3; LD_{50} = 50 - 500 mg/kg.
3.8 Toxicity by Inhalation: Currently not available.

3.9 Chronic Toxicity: May produce neoplasms or act as tumor promotors. Can cause central nervous system damage and chronic gastritis. Possible liver and kidney damage and lesions of of the heart and brain. Can cause dermatitis.

3.10 Vapor (Gas) Irritant Characteristics: Vapors cause moderate irritation such that per- sonnel will find high concentrations unpleasant. The effect is temporary.

3.11 Liquid or Solid Characteristics: Fairly sever skin irritant. May cause pain and second-degree burns after a few minutes contact.

3.12 Odor Threshold: 0.2 ppm recognition in air; 0.46 ppb detection in air.
3.13 IDLH Value: 250 ppm
3.14 OSHA PEL-TWA: 5 ppm
3.15 OSHA PEL-STEL: Not listed.
3.16 OSHA PEL-Ceiling: Not listed.
3.17 EPA AEGL: Not listed

4. FIRE HAZARDS

4.1 Flash Point: 187°F C.C.
4.2 Flammable Limits in Air: 1.06%- 1.4%
4.3 Fire Extinguishing Agents: CO_2, dry chemical, foam, water spray or fog.
4.4 Fire Extinguishing Agents Not to Be Used: Water may cause frothing.
4.5 Special Hazards of Combustion Products: Emits highly toxic fumes.
4.6 Behavior in Fire: Flammable toxic vapors may be given off.
4.7 Auto Ignition Temperature: 1038°F.
4.8 Electrical Hazards: Not pertinent
4.9 Burning Rate: Currently not available
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 40.5 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 11.0 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: No reaction
5.2 Reactivity with Common Materials: No reaction
5.3 Stability During Transport: Stable
5.4 Neutralizing Agents for Acids and Caustics: Not pertinent
5.5 Polymerization: Not pertinent
5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

6.1 Aquatic Toxicity:
21 ppm/24 hr/crucian carp/LC_{50}
17 ppm/24 hr/roach/LC_{50}
16 ppm/24 hr/tench/LC_{50}
24 ppm/48 hr/mosquito fish/TL_m/pond
10 ppm/96 hr/bluegill/TL_m/distilled water
6.2 Waterfowl Toxicity: Chronic waterfowl limit is 25 ppm.
6.3 Biological Oxygen Demand (BOD): 1.4-1.48 lb/lb 5 days.
6.4 Food Chain Concentration Potential: None
6.5 GESAMP Hazard Profile: Not listed

7. SHIPPING INFORMATION

7.1 Grades of Purity: 92-98% containing m-cresol.
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: No requirement
7.4 Venting: Open
7.5 IMO Pollution Category: A
7.6 Ship Type: 3
7.7 Barge Hull Type: 3

8. HAZARD CLASSIFICATIONS

8.1 49 CFR Category: Poison
8.2 49 CFR Class: 6.1
8.3 49 CFR Package Group: II
8.4 Marine Pollutant: Yes
8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	3
Flammability (Red).....	2
Instability (Yellow).....	0

8.6 EPA Reportable Quantity: 100 pounds
8.7 EPA Pollution Category: B
8.8 RCRA Waste Number: U052/D025
8.9 EPA FWPCA List: Yes

9. PHYSICAL & CHEMICAL PROPERTIES

9.1 Physical State at 15° C and 1 atm: Solid
9.2 Molecular Weight: 108.134.
9.3 Boiling Point at 1 atm: 395.46°F = 201.92°C = 475°K.
9.4 Freezing Point: 94.6°F = 34.78°C = 307.93°K.
9.5 Critical Temperature: 808.5°F = 431.4°C = 704.6°K.
9.6 Critical Pressure: 746.7 psia = 50.8 atm = 5.15 MN/m^2.
9.7 Specific Gravity: 1.034 at 20°C.
9.8 Liquid Surface Tension: 41.8 dynes/cm = 0.041 N/m at 40°C.
9.9 Liquid Water Interfacial Tension: 31.2 dynes/cm = 0.0312 N/m at 40°C.
9.10 Vapor (Gas) Specific Gravity: 3.72.
9.11 Ratio of Specific Heats of Vapor (Gas): >1 - 1.05 (est.)
9.12 Latent Heat of Vaporization: 188.7 Btu/lb = 104.85 cal/g = 4.39 X 10^5 J/kg.
9.13 Heat of Combustion: –14014 Btu/lb = –7786 cal/g = –326 X 10^5 J/kg
9.14 Heat of Decomposition: Not pertinent
9.15 Heat of Solution: Not pertinent
9.16 Heat of Polymerization: Not pertinent
9.17 Heat of Fusion: 26.28 cal/g
9.18 Limiting Value: Currently not available
9.19 Reid Vapor Pressure: Currently not available

NOTES

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9.20 SATURATED LIQUID DENSITY	
Temperature (degrees F)	Pounds per cubic foot
106	63.511
108	63.465
110	63.420
112	63.378
114	63.336
116	63.296
118	63.258
120	63.221
122	63.185

9.21 LIQUID HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
20	0.555

9.22 LIQUID THERMAL CONDUCTIVITY	
Temperature (degrees F)	British thermal unit inch per hour-square foot-F
20	1.001

9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Centipoise
104	7.000
105	6.812
106	6.634
107	6.465
108	6.304
109	6.151
110	6.005
111	5.866
112	5.734
113	5.607

9.24 SOLUBILITY IN WATER	
Temperature (degrees F)	Pounds per 100 pounds of water
105	2.454
110	2.711
115	2.945
120	3.159
125	3.356
130	3.539
135	3.707
140	3.864
145	4.010
150	4.146
155	4.273
160	4.392
165	4.505
170	4.610
175	4.710
180	4.804
185	4.892
190	4.977
195	5.057
200	5.132
205	5.205
210	5.273

9.25 SATURATED VAPOR PRESSURE	
Temperature (degrees F)	Pounds per square inch
105	0.013
110	0.015
115	0.018
120	0.022
125	0.025
130	0.030
135	0.035
140	0.042
145	0.049
150	0.058
155	0.069
160	0.081
165	0.096
170	0.113
175	0.133
180	0.157
185	0.186

9.26 SATURATED VAPOR DENSITY	
Temperature (degrees F)	Pounds per cubic foot
104	0.00022
105	0.00023
106	0.00024
107	0.00025
108	0.00026
109	0.00027
110	0.00028
111	0.00029
112	0.00030
113	0.00031
114	0.00032
115	0.00032
116	0.00033

9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
80	0.277
100	0.286
120	0.294
140	0.303
160	0.311
180	0.319
200	0.328
220	0.336
240	0.344
260	0.353
280	0.361
300	0.369
320	0.378
340	0.386
360	0.395
380	0.403
400	0.411
420	0.420
440	0.428