

# QUINOLINE

QNL

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> 1-Azanaphthalene 1-Benzazine Benzo (b) pyridine Chinoline Leucole	Liquid  Colorless to brown  Strong unpleasant odor
	Sinks in water.
<p>Keep people away. Avoid contact with liquid and vapor. Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>	
<b>Fire</b>	<p>Combustible. POISONOUS GASES MAY BE PRODUCED IN FIRE. Wear goggles and self-contained breathing apparatus. Extinguish with water, dry chemicals, foam, or carbon dioxide.</p>
<b>Exposure</b>	<p>CALL FOR MEDICAL AID.</p> <p>LIQUID Irritating to skin and eyes. If swallowed will cause nausea and vomiting. 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. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.</p>
<b>Water Pollution</b>	<p>HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>

<b>1. CORRECTIVE RESPONSE ACTIONS</b> Stop discharge Dilute and disperse Clean shore line	<b>2. CHEMICAL DESIGNATIONS</b> 2.1 CG Compatibility Group: Not listed. 2.2 Formula: C <sub>8</sub> H <sub>7</sub> N 2.3 IMO/UN Designation: Not listed 2.4 DOT ID No.: 2656 2.5 CAS Registry No.: 91-22-5 2.6 NAERG Guide No.: 154 2.7 Standard Industrial Trade Classification: 51575
<b>3. HEALTH HAZARDS</b>	
<p>3.1 <b>Personal Protective Equipment:</b> U. S. Bu. Mines approved vapor unit; chemical safety goggles; face shield; rubber gloves; coveralls and/or rubber apron; rubber shoes and boots.</p> <p>3.2 <b>Symptoms Following Exposure:</b> Vapors are irritating to nose and throat and may cause headaches, dizziness, and nausea if inhaled. Ingestion causes irritation of mouth and stomach; vomiting may occur. Contact with eyes or skin causes irritation.</p> <p>3.3 <b>Treatment of Exposure:</b> INHALATION: remove victim to fresh air. INGESTION: give large amount of water; induce vomiting; get medical attention. EYES: flush immediately with plenty of water for at least 15 min.; call physician. SKIN: flush with water.</p> <p>3.4 <b>TLV-TWA:</b> Not listed. 3.5 <b>TLV-STEL:</b> Not listed. 3.6 <b>TLV-Ceiling:</b> Not listed. 3.7 <b>Toxicity by Ingestion:</b> Grade 3; oral LD<sub>50</sub> = 460 mg/kg (rat) 3.8 <b>Toxicity by Inhalation:</b> Currently not available. 3.9 <b>Chronic Toxicity:</b> Currently not available 3.10 <b>Vapor (Gas) Irritant Characteristics:</b> Currently not available 3.11 <b>Liquid or Solid Characteristics:</b> Currently not available 3.12 <b>Odor Threshold:</b> 71 ppm 3.13 <b>IDLH Value:</b> Not listed. 3.14 <b>OSHA PEL-TWA:</b> Not listed. 3.15 <b>OSHA PEL-STEL:</b> Not listed. 3.16 <b>OSHA PEL-Ceiling:</b> Not listed. 3.17 <b>EPA AEGL:</b> Not listed</p>	

<b>4. FIRE HAZARDS</b> 4.1 <b>Flash Point:</b> 138°F C.C. 4.2 <b>Flammable Limits in Air:</b> LEL: 1.2% 4.3 <b>Fire Extinguishing Agents:</b> Water, dry chemical, foam, carbon dioxide 4.4 <b>Fire Extinguishing Agents Not to Be Used:</b> Currently not available 4.5 <b>Special Hazards of Combustion Products:</b> Toxic oxides of nitrogen may form in fires. 4.6 <b>Behavior in Fire:</b> Heat exposure may cause pressure build-up in closed containers. 4.7 <b>Auto Ignition Temperature:</b> 896°F 4.8 <b>Electrical Hazards:</b> Currently not available 4.9 <b>Burning Rate:</b> 4.06 mm/min. 4.10 <b>Adiabatic Flame Temperature:</b> Currently not available 4.11 <b>Stoichiometric Air to Fuel Ratio:</b> 55.9 (calc.) 4.12 <b>Flame Temperature:</b> Currently not available 4.13 <b>Combustion Molar Ratio (Reactant to Product):</b> 13.5 (calc.) 4.14 <b>Minimum Oxygen Concentration for Combustion (MOCC):</b> Not listed	<b>7. SHIPPING INFORMATION</b> 7.1 <b>Grades of Purity:</b> Reagent; Technical 7.2 <b>Storage Temperature:</b> Ambient 7.3 <b>Inert Atmosphere:</b> No requirement 7.4 <b>Venting:</b> Open (flame arrester) 7.5 <b>IMO Pollution Category:</b> Currently not available 7.6 <b>Ship Type:</b> Currently not available 7.7 <b>Barge Hull Type:</b> Currently not available								
<b>5. CHEMICAL REACTIVITY</b> 5.1 <b>Reactivity with Water:</b> No reaction 5.2 <b>Reactivity with Common Materials:</b> May attack some forms of plastics 5.3 <b>Stability During Transport:</b> Stable 5.4 <b>Neutralizing Agents for Acids and Caustics:</b> Not pertinent 5.5 <b>Polymerization:</b> Not pertinent 5.6 <b>Inhibitor of Polymerization:</b> Not pertinent	<b>8. HAZARD CLASSIFICATIONS</b> 8.1 <b>49 CFR Category:</b> Keep Away From Food 8.2 <b>49 CFR Class:</b> 6.1 8.3 <b>49 CFR Package Group:</b> III 8.4 <b>Marine Pollutant:</b> No 8.5 <b>NFPA Hazard Classification:</b> <table border="1"> <tr> <td>Category</td> <td>Classification</td> </tr> <tr> <td>Health Hazard (Blue).....</td> <td>3</td> </tr> <tr> <td>Flammability (Red).....</td> <td>2</td> </tr> <tr> <td>Instability (Yellow).....</td> <td>0</td> </tr> </table> 8.6 <b>EPA Reportable Quantity:</b> 5000 pounds 8.7 <b>EPA Pollution Category:</b> D 8.8 <b>RCRA Waste Number:</b> Not listed 8.9 <b>EPA FWPCA List:</b> Yes	Category	Classification	Health Hazard (Blue).....	3	Flammability (Red).....	2	Instability (Yellow).....	0
Category	Classification								
Health Hazard (Blue).....	3								
Flammability (Red).....	2								
Instability (Yellow).....	0								
<b>6. WATER POLLUTION</b> 6.1 <b>Aquatic Toxicity:</b> 52-56 ppm/96 hr/sunfish/TL <sub>50</sub> /fresh water 5 ppm/96 hr/trout/TL <sub>50</sub> /fresh water 6.2 <b>Waterfowl Toxicity:</b> Currently not available 6.3 <b>Biological Oxygen Demand (BOD):</b> 175%, 5 days 6.4 <b>Food Chain Concentration Potential:</b> None 6.5 <b>GESAMP Hazard Profile:</b> Not listed	<b>9. PHYSICAL &amp; CHEMICAL PROPERTIES</b> 9.1 <b>Physical State at 15° C and 1 atm:</b> Liquid 9.2 <b>Molecular Weight:</b> 129 9.3 <b>Boiling Point at 1 atm:</b> 459°F = 237°C = 510°K 9.4 <b>Freezing Point:</b> 5°F = -15°C = 258°K 9.5 <b>Critical Temperature:</b> 948.2°F = 509°C = 782.2°K 9.6 <b>Critical Pressure:</b> Currently not available 9.7 <b>Specific Gravity:</b> 1.095 at 20°C (liquid) 9.8 <b>Liquid Surface Tension:</b> 45.0 dynes/cm = 0.0450 N/m at 20°C 9.9 <b>Liquid Water Interfacial Tension:</b> Not pertinent 9.10 <b>Vapor (Gas) Specific Gravity:</b> 4.5 9.11 <b>Ratio of Specific Heats of Vapor (Gas):</b> Not pertinent 9.12 <b>Latent Heat of Vaporization:</b> (est.) 155 Btu/lb = 86 cal/g = 3.6 X 10 <sup>5</sup> J/kg 9.13 <b>Heat of Combustion:</b> -15,700 Btu/lb = -8,710 cal/g = -365 X 10 <sup>3</sup> J/kg 9.14 <b>Heat of Decomposition:</b> Not pertinent 9.15 <b>Heat of Solution:</b> Not pertinent 9.16 <b>Heat of Polymerization:</b> Not pertinent 9.17 <b>Heat of Fusion:</b> Currently not available 9.18 <b>Limiting Value:</b> Currently not available 9.19 <b>Reid Vapor Pressure:</b> Currently not available								
NOTES									

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9.20 SATURATED LIQUID DENSITY		9.21 LIQUID HEAT CAPACITY		9.22 LIQUID THERMAL CONDUCTIVITY		9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F	Temperature (degrees F)	British thermal unit inch per hour-square foot-F	Temperature (degrees F)	Centipoise
30	69.299	34	0.350	34	1.016	10	10.030
35	69.160	36	0.350	36	1.016	15	9.280
40	69.020	38	0.350	38	1.016	20	8.599
45	68.879	40	0.350	40	1.016	25	7.981
50	68.740	42	0.350	42	1.016	30	7.419
55	68.599	44	0.350	44	1.016	35	6.906
60	68.459	46	0.350	46	1.016	40	6.438
65	68.320	48	0.350	48	1.016	45	6.010
70	68.179	50	0.350	50	1.016	50	5.618
75	68.040	52	0.350	52	1.016	55	5.259
80	67.900	54	0.350	54	1.016	60	4.929
85	67.759	56	0.350	56	1.016	65	4.625
90	67.620	58	0.350	58	1.016	70	4.345
95	67.480	60	0.350	60	1.016	75	4.087
100	67.339	62	0.350	62	1.016	80	3.849
105	67.200	64	0.350	64	1.016	85	3.628
110	67.059	66	0.350	66	1.016	90	3.424
115	66.919	68	0.350	68	1.016	95	3.235
120	66.770	70	0.350	70	1.016	100	3.059
125	66.629	72	0.350	72	1.016	105	2.896
130	66.490	74	0.350	74	1.016		
		76	0.350	76	1.016		
				78	1.016		
				80	1.016		
				82	1.016		
				84	1.016		

9.24 SOLUBILITY IN WATER		9.25 SATURATED VAPOR PRESSURE		9.26 SATURATED VAPOR DENSITY		9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	Pounds per 100 pounds of water	Temperature (degrees F)	Pounds per square inch	Temperature (degrees F)	Pounds per cubic foot	Temperature (degrees F)	British thermal unit per pound-F
68	0.600	180	0.075	180	0.00141		N
		190	0.098	190	0.00182		O
		200	0.127	200	0.00232		T
		210	0.164	210	0.00294		
		220	0.209	220	0.00369		P
		230	0.265	230	0.00462		E
		240	0.334	240	0.00573		R
		250	0.417	250	0.00707		T
		260	0.519	260	0.00867		I
		270	0.642	270	0.01057		N
		280	0.788	280	0.01281		E
		290	0.964	290	0.01545		N
		300	1.171	300	0.01853		T
		310	1.417	310	0.02212		
		320	1.705	320	0.02629		
		330	2.043	330	0.03109		
		340	2.437	340	0.03662		
		350	2.893	350	0.04295		
		360	3.421	360	0.05016		
		370	4.029	370	0.05836		
		380	4.727	380	0.06765		
		390	5.525	390	0.07814		
		400	6.433	400	0.08993		
		410	7.465	410	0.10320		
		420	8.634	420	0.11790		
		430	9.952	430	0.13440		