

DIPENTENE

DPN

CAUTIONARY RESPONSE INFORMATION

Common Synonyms delta-1,8-Terpodiene Limonene p-Mentha-1,8-diene Phellandrene Terpinene	Liquid Colorless to light yellow Pleasant lemon-like odor
	Floats on water.
<p>Keep people away. Avoid contact with liquid and vapor. Shut off ignition sources. Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>	
Fire	<p>Combustible. Containers may explode in fire. Extinguish with dry chemicals, foam or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>
Exposure	<p>Call for medical aid.</p> <p>VAPOR Irritating to eyes, nose and throat. Move victim to fresh air. If breathing is difficult, give oxygen.</p> <p>LIQUID Irritating to skin and eyes. Harmful 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.</p>
Water Pollution	<p>Effect of low concentrations on aquatic life is unknown. Fouling to shoreline. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge
Contain
Collection Systems: Skim
Chemical and Physical Treatment: Burn;
Absorb
Clean shore line
Salvage waterfowl

2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** Not listed.
2.2 **Formula:** C₁₀H₁₆
2.3 **IMO/UN Designation:** 3.3/2052
2.4 **DOT ID No.:** 2052
2.5 **CAS Registry No.:** 138-86-3
2.6 **NAERG Guide No.:** 128
2.7 **Standard Industrial Trade Classification:** 51119

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Solvent-resistant gloves; safety glasses or face shield; self-contained breathing apparatus for high vapor concentrations.
- 3.2 **Symptoms Following Exposure:** Liquid irritates eyes; prolonged contact with skin causes irritation. Ingestion causes irritation of gastrointestinal tract.
- 3.3 **Treatment of Exposure:** INHALATION: remove victim from contaminated area; administer artificial respiration if necessary; call physician. EYES: flush with water for 15 min.; call physician. SKIN: wash with soap and water. INGESTION: induce vomiting; call physician.
- 3.4 **TLV-TWA:** Not listed.
3.5 **TLV-STEL:** Not listed.
3.6 **TLV-Ceiling:** Not listed.
3.7 **Toxicity by Ingestion:** Grade 2; oral LD₅₀ = 4,600 mg/kg (rat)
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** Currently not available
- 3.10 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
- 3.11 **Liquid or Solid Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
- 3.12 **Odor Threshold:** Currently not available
3.13 **IDLH Value:** Not listed.
3.14 **OSHA PEL-TWA:** Not listed.
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:** 115°F C.C.
4.2 **Flammable Limits in Air:** 0.7%-6.1%
4.3 **Fire Extinguishing Agents:** Foam, dry chemical, carbon dioxide
4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective.
4.5 **Special Hazards of Combustion Products:** Not pertinent
4.6 **Behavior in Fire:** Containers may explode.
4.7 **Auto Ignition Temperature:** 458°F
4.8 **Electrical Hazards:** Currently not available
4.9 **Burning Rate:** 5.5 mm/min.
4.10 **Adiabatic Flame Temperature:** Currently not available
4.11 **Stoichiometric Air to Fuel Ratio:** 66.6 (calc.)
4.12 **Flame Temperature:** Currently not available
4.13 **Combustion Molar Ratio (Reactant to Product):** 18.0 (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:** Currently not available
6.2 **Waterfowl Toxicity:** Currently not available
6.3 **Biological Oxygen Demand (BOD):** Currently not available
6.4 **Food Chain Concentration Potential:** None
6.5 **GESAMP Hazard Profile:**
Bioaccumulation: T
Damage to living resources: 4
Human Oral hazard: 1
Human Contact hazard: I
Reduction of amenities: X

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** Several technical grades, all having same general properties.
7.2 **Storage Temperature:** Ambient
7.3 **Inert Atmosphere:** No requirement
7.4 **Venting:** Open (flame arrester)
7.5 **IMO Pollution Category:** C
7.6 **Ship Type:** 3
7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

- 8.1 **49 CFR Category:** Flammable liquid
8.2 **49 CFR Class:** 3
8.3 **49 CFR Package Group:** III
8.4 **Marine Pollutant:** No
8.5 **NFPA Hazard Classification:**
- | Category | Classification |
|---------------------------|----------------|
| Health Hazard (Blue)..... | 0 |
| Flammability (Red)..... | 2 |
| Instability (Yellow)..... | 0 |
- 8.6 **EPA Reportable Quantity:** Not listed.
8.7 **EPA Pollution Category:** Not listed.
8.8 **RCRA Waste Number:** Not listed
8.9 **EPA FWPCA List:** Not listed

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
9.2 **Molecular Weight:** 136.2
9.3 **Boiling Point at 1 atm:** 352°F = 178°C = 451°K
9.4 **Freezing Point:** -40°F = -40°C = 233°K
9.5 **Critical Temperature:** Not pertinent
9.6 **Critical Pressure:** Not pertinent
9.7 **Specific Gravity:** 0.842 at 21°C (liquid)
9.8 **Liquid Surface Tension:** (est.) 26 dynes/cm = 0.026 N/m at 20°C
9.9 **Liquid Water Interfacial Tension:** 27.45 dynes/cm = 0.02745 N/m at 33.5°C
9.10 **Vapor (Gas) Specific Gravity:** 4.9
9.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
9.12 **Latent Heat of Vaporization:** 140 Btu/lb = 77 cal/g = 3.2 X 10⁵ J/kg
9.13 **Heat of Combustion:** -19,520 Btu/lb = -10,840 cal/g = -454 X 10⁵ 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:** Currently not available
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		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
32	53.740	34	0.421	52	1.048	34	1.468
34	53.670	36	0.422	54	1.048	36	1.423
36	53.600	38	0.423	56	1.048	38	1.380
38	53.530	40	0.424	58	1.048	40	1.339
40	53.460	42	0.426	60	1.048	42	1.299
42	53.390	44	0.427	62	1.048	44	1.261
44	53.320	46	0.428	64	1.048	46	1.224
46	53.250	48	0.429	66	1.048	48	1.189
48	53.180	50	0.430	68	1.048	50	1.154
50	53.110	52	0.431	70	1.048	52	1.121
52	53.040	54	0.432	72	1.048	54	1.090
54	52.970	56	0.433	74	1.048	56	1.059
56	52.900	58	0.434	76	1.048	58	1.029
58	52.830	60	0.436	78	1.048	60	1.001
60	52.770	62	0.437	80	1.048	62	0.973
62	52.700	64	0.438	82	1.048	64	0.947
64	52.630	66	0.439	84	1.048	66	0.921
66	52.560	68	0.440	86	1.048	68	0.896
68	52.490	70	0.441			70	0.872
70	52.420	72	0.442			72	0.849
72	52.350	74	0.443			74	0.827
74	52.280	76	0.444			76	0.805
76	52.210	78	0.446			78	0.784
78	52.140	80	0.447			80	0.764
80	52.070	82	0.448			82	0.745
82	52.000	84	0.449			84	0.726

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
	I	34	0.011	34	0.00029		N
	N	36	0.012	36	0.00031		O
	S	38	0.013	38	0.00033		T
	O	40	0.014	40	0.00036		
	L	42	0.015	42	0.00038		P
	U	44	0.016	44	0.00041		E
	B	46	0.018	46	0.00044		R
	L	48	0.019	48	0.00047		T
	E	50	0.020	50	0.00051		I
		52	0.022	52	0.00054		N
		54	0.024	54	0.00058		E
		56	0.025	56	0.00062		N
		58	0.027	58	0.00067		T
		60	0.029	60	0.00071		
		62	0.031	62	0.00076		
		64	0.034	64	0.00082		
		66	0.036	66	0.00087		
		68	0.039	68	0.00093		
		70	0.041	70	0.00099		
		72	0.044	72	0.00106		
		74	0.047	74	0.00113		
		76	0.051	76	0.00120		
		78	0.054	78	0.00128		
		80	0.058	80	0.00136		
		82	0.062	82	0.00145		
		84	0.066	84	0.00154		