

VINYL TOLUENE

VNT

CAUTIONARY RESPONSE INFORMATION

| | |
|--|---|
| Common Synonyms p-Methylstyrene | Watery liquid Colorless Unpleasant odor |
| Floats on water. | |
| <p>Avoid contact with liquid. Call fire department. Notify local health and pollution control agencies. Protect water intakes.</p> | |
| Fire | <p>Combustible. Containers may explode in fire. Wear goggles and self-contained breathing apparatus. Extinguish with water, dry chemical, foam, or carbon dioxide. Cool exposed containers with water.</p> |
| Exposure | <p>CALL FOR MEDICAL AID.</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

Dilute and disperse
Stop discharge
Contain
Collection Systems: Skim
Salvage waterfowl

2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** 30; Olefin
2.2 **Formula:** C_9H_{10} ; $CH_2=CH-C_6H_5$
2.3 **IMO/UN Designation:** Not listed
2.4 **DOT ID No.:** 2618
2.5 **CAS Registry No.:** 25013-15-4
2.6 **NAERG Guide No.:** 130P
2.7 **Standard Industrial Trade Classification:** 51129

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Air-supplied mask; goggles or face shield; plastic gloves.
3.2 **Symptoms Following Exposure:** Vapors irritate eyes and nose, high levels cause dizziness, drunkenness, and anesthesia. Liquid irritates eyes and may irritate skin.
3.3 **Treatment of Exposure:** INHALATION: remove person to fresh air; give artificial respiration and oxygen if needed; call a doctor. INGESTION: do NOT induce vomiting; no known antidote; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water.
3.4 **TLV-TWA:** 50 ppm
3.5 **TLV-STEL:** 100 ppm
3.6 **TLV-Ceiling:** Not listed.
3.7 **Toxicity by Ingestion:** Grade 2; $LD_{50} = 0.5$ to 5 g/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 moderate irritation such that personnel will find high concentrations unpleasant. 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:** 50 ppm
3.13 **IDLH Value:** 400 ppm
3.14 **OSHA PEL-TWA:** 100 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:** 137°F O.C. 125°F C.C.
4.2 **Flammable Limits in Air:** 0.8%-11%
4.3 **Fire Extinguishing Agents:** Water fog, foam, carbon dioxide, or dry chemical
4.4 **Fire Extinguishing Agents Not to Be Used:** Not pertinent
4.5 **Special Hazards of Combustion Products:** Not pertinent
4.6 **Behavior in Fire:** Containers may explode or rupture in a fire due to polymerization.
4.7 **Auto Ignition Temperature:** 1000°F
4.8 **Electrical Hazards:** I, D
4.9 **Burning Rate:** 6.0 mm/min.
4.10 **Adiabatic Flame Temperature:** Currently not available
4.11 **Stoichiometric Air to Fuel Ratio:** 54.7 (calc.)
4.12 **Flame Temperature:** Currently not available
4.13 **Combustion Molar Ratio (Reactant to Product):** 14.0 (calc.)
4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** N_2 diluent: 9.0%

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:** Slow at ordinary temperatures but when hot may rupture container. Also polymerized by metal salts such as those of iron or aluminum.
5.6 **Inhibitor of Polymerization:** 10-50 ppm tertiary butylcatechol

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: 3
Human Oral hazard: 1
Human Contact hazard: I
Reduction of amenities: X

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99.2+%
7.2 **Storage Temperature:** Ambient
7.3 **Inert Atmosphere:** No requirement
7.4 **Venting:** Open (flame arrester)
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:** Flammable liquid
8.2 **49 CFR Class:** 3
8.3 **49 CFR Package Group:** III
8.4 **Marine Pollutant:** Yes
8.5 **NFPA Hazard Classification:**
- | | |
|---------------------------|----------------|
| Category | Classification |
| Health Hazard (Blue)..... | 2 |
| Flammability (Red)..... | 2 |
| Instability (Yellow)..... | 2 |
- 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:** 118.18
9.3 **Boiling Point at 1 atm:** 333.9°F = 167.7°C = 440.9°K
9.4 **Freezing Point:** -106.6°F = -77.0°C = 196.2°K
9.5 **Critical Temperature:** Not pertinent
9.6 **Critical Pressure:** Not pertinent
9.7 **Specific Gravity:** 0.897 at 20°C (liquid)
9.8 **Liquid Surface Tension:** 31.53 dynes/cm = 0.03153 N/m at 20°C
9.9 **Liquid Water Interfacial Tension:** (est.) 45 dynes/cm = 0.045 N/m at 20°C
9.10 **Vapor (Gas) Specific Gravity:** Not pertinent
9.11 **Ratio of Specific Heats of Vapor (Gas):** (est.) 1.060
9.12 **Latent Heat of Vaporization:** 150 Btu/lb = 83.5 cal/g = 3.50 X 10⁵ J/kg
9.13 **Heat of Combustion:** -17.710 Btu/lb = -9840 cal/g = 412.0 X 10³ J/kg
9.14 **Heat of Decomposition:** Not pertinent
9.15 **Heat of Solution:** Not pertinent
9.16 **Heat of Polymerization:** -243 Btu/lb = -135 cal/g = -5.65 X 10³ J/kg
9.17 **Heat of Fusion:** Currently not available
9.18 **Limiting Value:** Currently not available
9.19 **Reid Vapor Pressure:** 0.07 psia

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 |
| 35 | 56.910 | 35 | 0.393 | 41 | 1.040 | 35 | 1.091 |
| 40 | 56.770 | 40 | 0.396 | 42 | 1.040 | 40 | 1.046 |
| 45 | 56.630 | 45 | 0.398 | 43 | 1.040 | 45 | 1.003 |
| 50 | 56.490 | 50 | 0.401 | 44 | 1.040 | 50 | 0.963 |
| 55 | 56.350 | 55 | 0.403 | 45 | 1.040 | 55 | 0.925 |
| 60 | 56.220 | 60 | 0.406 | 46 | 1.040 | 60 | 0.889 |
| 65 | 56.080 | 65 | 0.408 | 47 | 1.040 | 65 | 0.856 |
| 70 | 55.940 | 70 | 0.411 | 48 | 1.040 | 70 | 0.824 |
| 75 | 55.800 | 75 | 0.413 | 49 | 1.040 | 75 | 0.794 |
| 80 | 55.660 | 80 | 0.416 | 50 | 1.040 | 80 | 0.765 |
| 85 | 55.520 | 85 | 0.418 | 51 | 1.040 | 85 | 0.738 |
| 90 | 55.380 | 90 | 0.421 | 52 | 1.040 | 90 | 0.713 |
| 95 | 55.240 | 95 | 0.423 | 53 | 1.040 | 95 | 0.689 |
| 100 | 55.110 | 100 | 0.426 | 54 | 1.040 | 100 | 0.666 |
| 105 | 54.970 | 105 | 0.428 | 55 | 1.040 | 105 | 0.644 |
| 110 | 54.830 | 110 | 0.431 | 56 | 1.040 | 110 | 0.623 |
| 115 | 54.690 | 115 | 0.433 | 57 | 1.040 | 115 | 0.603 |
| 120 | 54.550 | 120 | 0.436 | 58 | 1.040 | 120 | 0.585 |
| 125 | 54.410 | | | 59 | 1.040 | 125 | 0.567 |
| 130 | 54.270 | | | 60 | 1.040 | 130 | 0.550 |
| 135 | 54.130 | | | 61 | 1.040 | 135 | 0.533 |
| 140 | 54.000 | | | 62 | 1.040 | 140 | 0.518 |
| | | | | 63 | 1.040 | | |
| | | | | 64 | 1.040 | | |
| | | | | 65 | 1.040 | | |
| | | | | 66 | 1.040 | | |

| 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 |
| 77 | 0.009 | 40 | 0.007 | 40 | 0.00015 | 85 | 0.295 |
| | | 50 | 0.010 | 50 | 0.00023 | 90 | 0.295 |
| | | 60 | 0.016 | 60 | 0.00033 | 95 | 0.295 |
| | | 70 | 0.023 | 70 | 0.00048 | 100 | 0.295 |
| | | 80 | 0.033 | 80 | 0.00068 | 105 | 0.295 |
| | | 90 | 0.048 | 90 | 0.00095 | 110 | 0.295 |
| | | 100 | 0.067 | 100 | 0.00132 | 115 | 0.295 |
| | | 110 | 0.094 | 110 | 0.00182 | 120 | 0.295 |
| | | 120 | 0.130 | 120 | 0.00246 | 125 | 0.295 |
| | | 130 | 0.177 | 130 | 0.00331 | 130 | 0.295 |
| | | 140 | 0.239 | 140 | 0.00439 | 135 | 0.295 |
| | | 150 | 0.320 | 150 | 0.00578 | 140 | 0.295 |
| | | 160 | 0.424 | 160 | 0.00754 | 145 | 0.295 |
| | | 170 | 0.557 | 170 | 0.00975 | 150 | 0.295 |
| | | 180 | 0.726 | 180 | 0.01249 | 155 | 0.295 |
| | | 190 | 0.938 | 190 | 0.01589 | 160 | 0.295 |
| | | 200 | 1.202 | 200 | 0.02006 | 165 | 0.295 |
| | | 210 | 1.530 | 210 | 0.02515 | 170 | 0.295 |
| | | 220 | 1.932 | 220 | 0.03130 | | |
| | | 230 | 2.425 | 230 | 0.03871 | | |
| | | 240 | 3.023 | 240 | 0.04757 | | |