**3. HEALTH HAZARDS**

3.1 Personal Protective Equipment: Protective gloves, goggles or face shield.

3.2 Symptoms Following Exposure: Vapor causes slight irritation of eyes and nose. Liquid irritates stomach, if taken into lungs, causes coughing, distress, and rapidly developing pulmonary edema.

3.3 Treatment of Exposure: ASPIRATION: Enforce bed rest; administer oxygen; call a doctor.

3.4 TLV-TWA: Not listed.

3.5 TLV-STEL: Not listed.

3.6 TLV-Ceiling: Not listed.

3.7 Toxicity by Inhalation: Grade 2; LD50 = 0.5 to 5 g/kg

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: 1 ppm

3.13 OSHA TLV: 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 AEG: Not listed

**2. CHEMICAL DESIGNATIONS**

2.1 CG Compatibility Group: 33; Miscellaneous Hydrocarbon Mixtures

2.2 Formula: Not pertinent

2.3 IMDS/UN Designation: 3.3/2761

2.4 DOT No.: 1863

2.5 CAS Registry No.: Currently not available

2.6 NAERG Guide No.: 128

2.7 Standard Industrial Trade Classification: 33412

**4. FIRE HAZARDS**

4.1 Flash Point: 140°F (min.); C.

4.2 Flammable Limits in Air: 0.6%–4.6%

4.3 Fire Extinguishing Agents: Foam, dry chemical, or carbon dioxide

4.4 Fire Extinguishing Agent Not to Be Used: Water may be ineffective

4.5 Special Hazards of Combustion Products: Not pertinent

4.6 Behavior in Fire: Not pertinent

4.7 Auto Ignition Temperature: 475°F

4.8 Electrical Hazards: Not pertinent

4.9 Burning Rate: 4 mm/min.

4.10 Adiabatic Flame Temperature: Currently not available

4.11 Steady-State Air to Fuel Ratio: Not pertinent.

4.12 Flame Temperature: Currently not available


4.14 Minimum Oxygen Concentration for Combustion (MOC): 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 Initiator of Polymerization: Not pertinent

**6. WATER POLLUTION**

6.1 Aquatic Toxicity: None

6.2 Waterfowl Toxicity: Currently not available

6.3 Biological Oxygen Demand (BOD): 53%, 5 days

6.4 Food Chain Concentration Potential: None

6.5 GESAMP Hazard Profile: Not listed

**7. SHIPPING INFORMATION**

7.1 Grades of Purity: 100%

7.2 Storage Temperature: Ambient

7.3 Inert Atmosphere: No requirement

7.4 Venting: Open (flame arrestor)

7.5 IMO Pollution Category: Currently not available

7.6 Ship Type: Currently not available

7.7 Barge Hull Type: Currently not available

**8. HAZARD CLASSIFICATIONS**

8.1 40 CFR Category: Flammable liquid

8.2 40 CFR Class: 3

8.3 40 CFR Package Group: III

8.4 Marine Pollutant: No

8.5 NFPA Hazard Classification: Not pertinent

8.6 EPA Reportable Quantity: Not listed.

8.7 EPA Pollution Category: Not listed.

8.8 RORA Waste Number: Not listed

8.9 EPA FIFRA List: Not listed

**9. PHYSICAL & CHEMICAL PROPERTIES**

9.1 Physical State at 15°C and 1 atm: Liquid

9.2 Molecular Weight: Not pertinent

9.3 Boiling Point at 1 atm: 349.54°F = 176.87°C = 476.56 K

9.4 Freezing Point: ≤-54°F = ≤-48°C = ≤-225°K

9.5 Critical Temperature: Not pertinent

9.6 Critical Pressure: Not pertinent

9.7 Specific Gravity: 0.82 at 15°C (liquid)

9.8 Liquid Surface Tension: (est.) 25 dynes/cm = 0.025 N/m at 20°C

9.9 Liquid Water Interfacial Tension: (est.) 50 dynes/cm = 0.05 N/m at 20°C

9.10 Vapor (Gas) Specific Gravity: Not pertinent

9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent

9.12 Latent Heat of Vaporization: 140 Btu/lb = 78 cal/g = 3.3 X 10^3 J/kg

9.13 Heat of Combustion: 18.540 Btu/lb = 10.300 cal/g = 431.24 X 10^3 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 Values: Currently not available

9.19 Reid Vapor Pressure: Currently not available

**NOTES**
### SATURATED LIQUID DENSITY

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<tr>
<th>Temperature (degrees F)</th>
<th>Pounds per cubic foot</th>
<th>Temperature (degrees F)</th>
<th>British thermal unit per pound-F</th>
<th>Temperature (degrees F)</th>
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### SOLUBILITY IN WATER

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### JET FUELS: JP-5

**Saturated Liquid Density**

- **Temperature (degrees F)**: 34 to 76 degrees F
- **Pounds per cubic foot**: 52.370 to 51.740
- **British thermal unit per pound-F**: 0.444 to 0.480
- **Centipoise**:
  - 34 degrees F: 10.600
  - 36 degrees F: 9.614
  - 38 degrees F: 8.739
  - 40 degrees F: 7.860
  - 42 degrees F: 6.986
  - 44 degrees F: 6.109
  - 46 degrees F: 5.232
  - 48 degrees F: 5.444
  - 50 degrees F: 5.144
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  - 54 degrees F: 4.376
  - 56 degrees F: 4.046
  - 58 degrees F: 3.747
  - 60 degrees F: 3.476
  - 62 degrees F: 3.229
  - 64 degrees F: 3.004
  - 66 degrees F: 2.799
  - 68 degrees F: 2.612
  - 70 degrees F: 2.440
  - 72 degrees F: 2.282
  - 74 degrees F: 2.138
  - 76 degrees F: 2.005
  - 78 degrees F: 1.883

**Solubility in Water**

- **Temperature (degrees F)**: 34 to 76 degrees F
- **Pounds per 100 pounds of water**: 130 to 70
- **Pounds per square inch**: 0.101 to 0.880
- **Pounds per cubic foot**: 0.826 to 0.924

**Saturated Vapor Pressure**

- **Temperature (degrees F)**: 34 to 76 degrees F
- **Pounds per square inch**: 0.101 to 0.880

**Saturated Vapor Density**

- **Temperature (degrees F)**: 34 to 76 degrees F
- **Pounds per cubic foot**: 0.826 to 0.924

**Ideal Gas Heat Capacity**

- **Temperature (degrees F)**: 34 to 76 degrees F
- **British thermal unit per pound-F**: 0.826 to 0.924