

# JET FUELS: JP-4

JPF

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b>	Watery liquid	Colorless	Fuel oil odor
	Floats on water.		
<p>Keep people away.                  Shut off ignition sources and call fire department.                  Avoid contact with liquid.                  Notify local health and pollution control agencies.</p>			
<b>Fire</b>	<p>FLAMMABLE.                  Extinguish with dry chemical, foam, or carbon dioxide.                  Water may be ineffective on fire.                  Cool exposed containers with water.</p>		
<b>Exposure</b>	<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.                  DO NOT INDUCE VOMITING.</p>		
<b>Water Pollution</b>	<p>Dangerous to aquatic life in high 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>		

### 1. CORRECTIVE RESPONSE ACTIONS

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

### 2. CHEMICAL DESIGNATIONS

2.1 **CG Compatibility Group:** 33; Miscellaneous Hydrocarbon Mixtures  
 2.2 **Formula:** C<sub>12</sub>H<sub>24</sub>  
 2.3 **IMO/IUN Designation:** 3.2/1863  
 2.4 **DOT ID No.:** 1863  
 2.5 **CAS Registry No.:** Currently not available  
 2.6 **NAERG Guide No.:** 128  
 2.7 **Standard Industrial Trade Classification:** 33412

### 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. INGESTION: do NOT induce vomiting; call a doctor. EYES: wash with plenty of water. SKIN: wipe off and wash with soap and water.  
 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; LD<sub>50</sub> = 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 **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:** -10°F to +30°F C.C.  
 4.2 **Flammable Limits in Air:** 1.3%-8.0%  
 4.3 **Fire Extinguishing Agents:** Foam, dry chemical, or carbon dioxide  
 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:** Not pertinent  
 4.7 **Auto Ignition Temperature:** 464°F  
 4.8 **Electrical Hazards:** Not pertinent  
 4.9 **Burning Rate:** 4 mm/min.  
 4.10 **Adiabatic Flame Temperature:** Currently not available  
 4.11 **Stoichiometric Air to Fuel Ratio:** Not pertinent.  
 4.12 **Flame Temperature:** Currently not available  
 4.13 **Combustion Molar Ratio (Reactant to Product):** Not pertinent.  
 4.14 **Minimum Oxygen Concentration for Combustion (MOCC):** N<sub>2</sub> diluent: 11.5%; CO<sub>2</sub> diluent: 14.5%

### 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:** 500 ppm\*/salmon fingerling/lethal/ fresh water  
 \*Time period not specified  
 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 arrester) or pressure-vacuum  
 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 **49 CFR Category:** Flammable liquid  
 8.2 **49 CFR Class:** 3  
 8.3 **49 CFR Package Group:** II  
 8.4 **Marine Pollutant:** No  
 8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue).....	1
Flammability (Red).....	3
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:** Not pertinent  
 9.3 **Boiling Point at 1 atm:** 349-549°F = 176-287°C = 449-560°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:** 0.81 at 20°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):** (est.) 1.030  
 9.12 **Latent Heat of Vaporization:** 140 Btu/lb = 78 cal/g = 3.3 X 10<sup>5</sup> J/kg  
 9.13 **Heat of Combustion:** -18,540 Btu/lb = -10,300 cal/g = -431.24 X 10<sup>5</sup> 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
34	51.740	0	0.444	0	0.926	-35	2.106
36	51.670	10	0.449	10	0.924	-30	1.994
38	51.600	20	0.454	20	0.921	-25	1.890
40	51.530	30	0.459	30	0.919	-20	1.794
42	51.460	40	0.464	40	0.917	-15	1.705
44	51.390	50	0.469	50	0.915	-10	1.622
46	51.320	60	0.474	60	0.913	-5	1.544
48	51.260	70	0.479	70	0.911	0	1.472
50	51.190	80	0.484	80	0.909	5	1.405
52	51.120	90	0.489	90	0.907	10	1.342
54	51.050	100	0.494	100	0.905	15	1.283
56	50.980	110	0.499	110	0.903	20	1.228
58	50.910	120	0.504	120	0.901	25	1.176
60	50.840	130	0.509	130	0.899	30	1.128
62	50.770	140	0.514	140	0.897	35	1.082
64	50.700	150	0.519	150	0.895	40	1.039
66	50.630	160	0.524	160	0.893	45	0.999
68	50.560	170	0.529	170	0.891	50	0.961
70	50.490	180	0.534	180	0.889	55	0.925
72	50.420	190	0.539	190	0.887	60	0.891
74	50.350	200	0.544	200	0.885	65	0.859
76	50.280	210	0.549	210	0.883	70	0.829
78	50.220					75	0.800
80	50.150						
82	50.080						
84	50.010						

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	0	0.319		N		C
	N	10	0.411		O		U
	S	20	0.525		T		R
	O	30	0.663		P		R
	L	40	0.829		E		E
	U	50	1.028		R		N
	B	60	1.264		T		T
	L	70	1.542		I		L
	E	80	1.868		N		Y
		90	2.246		E		N
		100	2.684		N		O
		110	3.187		T		T
		120	3.762		A		V
		130	4.416		V		A
		140	5.155		I		I
		150	5.988		L		L
		160	6.922		A		A
		170	7.965		B		B
		180	9.125		L		L
		190	10.410		E		E
		200	11.830				
		210	13.390				