

OILS, FUEL: 4

OFR

CAUTIONARY RESPONSE INFORMATION

Common Synonyms		
No. 4 Residual fuel oil	Oily liquid Floats on water.	Dark Lube or fuel oil odor
<p>Keep people away. Avoid contact with liquid. Shut off ignition sources and call fire department. Notify local health and pollution control agencies. Protect water intakes.</p>		
Fire	Combustible. Extinguish with dry chemical, foam or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.	
Exposure	CALL FOR MEDICAL AID. 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.	
Water Pollution	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</p> Stop discharge Contain Collection Systems: Skim Chemical and Physical Treatment: Burn; Absorb Clean shore line Salvage waterfowl	<p>2. CHEMICAL DESIGNATIONS</p> 2.1 CG Compatibility Group: 33; Miscellaneous Hydrocarbon Mixtures 2.2 Formula: Not applicable 2.3 IMO/UN Designation: 3.3/1223 2.4 DOT ID No.: 1993 2.5 CAS Registry No.: Currently not available 2.6 NAERG Guide No.: 128 2.7 Standard Industrial Trade Classification: 33440
<p>3. HEALTH HAZARDS</p> 3.1 Personal Protective Equipment: Protective gloves; goggles or face shield. 3.2 Symptoms Following Exposure: INGESTION: gastrointestinal irritation. ASPIRATION: pulmonary irritation is normally minimal but may become more severe several hours after exposure. 3.3 Treatment of Exposure: INGESTION: do NOT lavage or induce vomiting. ASPIRATION: treatment probably not required; delayed development of pulmonary irritation can be detected by serial chest x-rays; consider prophylactic antibiotic regime if condition warrants. EYES: wash with copious quantity of water. SKIN: wipe off and wash with soap and water. 3.4 TLV-TWA: Notice of intended change: Not listed. 3.5 TLV-STEL: Not listed. 3.6 TLV-Ceiling: Not listed. 3.7 Toxicity by Ingestion: Grade 1; LD ₅₀ = 5 to 15 g/kg 3.8 Toxicity by Inhalation: Currently not available. 3.9 Chronic Toxicity: Currently not available 3.10 Vapor (Gas) Irritant Characteristics: None 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	

<p>4. FIRE HAZARDS</p> 4.1 Flash Point: >130°F C.C. 4.2 Flammable Limits in Air: 1.0%-5% 4.3 Fire Extinguishing Agents: Dry chemical, foam, or 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: Not pertinent 4.7 Auto Ignition Temperature: 505°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): Not listed	<p>7. SHIPPING INFORMATION</p> 7.1 Grades of Purity: Commercial 7.2 Storage Temperature: Ambient 7.3 Inert Atmosphere: No requirement 7.4 Venting: Open (flame arrester) 7.5 IMO Pollution Category: Currently not available 7.6 Ship Type: Currently not available 7.7 Barge Hull Type: Currently not available
<p>5. CHEMICAL REACTIVITY</p> 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	<p>8. HAZARD CLASSIFICATIONS</p> 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:
<p>6. WATER POLLUTION</p> 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: Not listed	<p>9. PHYSICAL & CHEMICAL PROPERTIES</p> 9.1 Physical State at 15° C and 1 atm: Liquid 9.2 Molecular Weight: Not pertinent 9.3 Boiling Point at 1 atm: 214 to >1092°F = 101 to >588°C = 374 to 861°K 9.4 Freezing Point: -20 to +15°F = -29 to -9°C = 244 to 264°K 9.5 Critical Temperature: Not pertinent 9.6 Critical Pressure: Not pertinent 9.7 Specific Gravity: 0.904 at 15°C (liquid) 9.8 Liquid Surface Tension: Currently not available 9.9 Liquid Water Interfacial Tension: Currently not available 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: Not pertinent 9.13 Heat of Combustion: -17,460 Btu/lb = -9,700 cal/g = -406.1 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 Value: Currently not available 9.19 Reid Vapor Pressure: Currently not available
<p>NOTES</p>	

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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
50	56.180	50	0.460	35	0.908	100	14.500
52	56.180	52	0.461	40	0.908		
54	56.180	54	0.462	45	0.908		
56	56.180	56	0.463	50	0.908		
58	56.180	58	0.464	55	0.908		
60	56.180	60	0.465	60	0.908		
62	56.180	62	0.466	65	0.908		
64	56.180	64	0.467	70	0.908		
66	56.180	66	0.468	75	0.908		
68	56.180	68	0.469	80	0.908		
70	56.180	70	0.470	85	0.908		
72	56.180	72	0.471	90	0.908		
74	56.180	74	0.472	95	0.908		
76	56.180	76	0.473	100	0.908		
78	56.180	78	0.474	105	0.908		
80	56.180	80	0.475	110	0.908		
82	56.180	82	0.476	115	0.908		
84	56.180	84	0.477	120	0.908		
		86	0.478	125	0.908		
		88	0.479				
		90	0.480				
		92	0.481				
		94	0.482				
		96	0.483				
		98	0.484				
		100	0.485				

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	70	0.042		N		N
	N	75	0.049		O		O
	S	80	0.057		T		T
	O	85	0.065				
	L	90	0.076		P		P
	U	95	0.087		E		E
	B	100	0.100		R		R
	L	105	0.114		T		T
	E	110	0.131		I		I
		115	0.149		N		N
		120	0.170		E		E
		125	0.193		N		N
		130	0.218		T		T
		135	0.247				
		140	0.279				
		145	0.314				
		150	0.352				
		155	0.395				
		160	0.443				
		165	0.495				
		170	0.552				
		175	0.615				
		180	0.683				
		185	0.758				
		190	0.841				
		195	0.930				