

METHYL N-BUTYL KETONE

MBK

CAUTIONARY RESPONSE INFORMATION

Common Synonyms n-Butyl methyl ketone 2-Hexanone	Liquid	Clear	Disagreeable Odor
Floats and mixes with water.			
Keep people away. Avoid contact with liquid and vapor. Shut off ignition sources. Call fire department. Stay upwind. Use water spray to "knock down" vapor. Notify local health and pollution control agencies.			
Fire	<p>FLAMMABLE. Containers may explode in fire. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Extinguish with dry chemicals, alcohol 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. Harmful if inhaled. If in eyes, hold eyelids open and flush with plenty of water. If breathing has stopped, give artificial respiration. 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 of milk and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.</p>		
Water Pollution	<p>Effect of low concentrations on aquatic life is unknown. 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: CH₃(CH₂)₃COCH₃
2.3 IMO/UN Designation: Not listed
2.4 DOT ID No.: Not listed
2.5 CAS Registry No.: 591-78-6
2.6 NAERG Guide No.: Not listed
2.7 Standard Industrial Trade Classification: 51625

3. HEALTH HAZARDS

3.1 **Personal Protective Equipment:** Protective gloves; goggles or face shield; approved respirator (for major spills)

3.2 **Symptoms Following Exposure:** Inhalation of high concentrations of vapor may result in narcosis; peripheral neuropathy may develop. Ingestion of large amounts may cause some systemic injury. Contact with eyes causes mild to moderate irritation. Liquid irritates skin; prolonged or repeated contact may cause defatting of the skin with resultant dermatitis.

3.3 **Treatment of Exposure:** INHALATION: move to uncontaminated atmosphere and treat symptomatically; alert physician to possible development of peripheral neuropathy. INGESTION: give large amount of water and induce vomiting. EYES: irrigate immediately and thoroughly with water for 15 min. and get medical attention. SKIN: flush exposed areas thoroughly with water.

3.4 TLV-TWA: 5 ppm
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: Not listed.
3.7 **Toxicity by Ingestion:** Grade 2; oral LD₅₀ = 2,590 mg/kg (rat)
3.8 **Toxicity by Inhalation:** Currently not available.
3.9 **Chronic Toxicity:** Peripheral neuropathy in experimental animals and man (disease of motor and/or sensory nerves)
3.10 **Vapor (Gas) Irritant Characteristics:** Currently not available
3.11 **Liquid or Solid Characteristics:** Currently not available
3.12 **Odor Threshold:** Currently not available
3.13 **IDLH Value:** 1,600 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:** 83°F O.C. 77°F C.C.
4.2 **Flammable Limits in Air:** 1.3%-8.0%
4.3 **Fire Extinguishing Agents:** Dry chemical, "alcohol" foam, carbon dioxide
4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective.
4.5 **Special Hazards of Combustion Products:** Currently not available
4.6 **Behavior in Fire:** Currently not available
4.7 **Auto Ignition Temperature:** 795°F
4.8 **Electrical Hazards:** Currently not available
4.9 **Burning Rate:** 4.8 mm/min.
4.10 **Adiabatic Flame Temperature:** Currently not available
4.11 **Stoichiometric Air to Fuel Ratio:** 40.5 (calc.)
4.12 **Flame Temperature:** Currently not available
4.13 **Combustion Molar Ratio (Reactant to Product):** 12.0 (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:** Currently not available
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:** Not listed

7. SHIPPING INFORMATION

7.1 **Grades of Purity:** Commercial, 95%; Pure, 99%
7.2 **Storage Temperature:** Ambient
7.3 **Inert Atmosphere:** No requirement
7.4 **Venting:** Open (flame arrester)
7.5 **IMO Pollution Category:** D
7.6 **Ship Type:** Data not available
7.7 **Barge Hull Type:** Currently not available

8. HAZARD CLASSIFICATIONS

8.1 **49 CFR Category:** Not listed
8.2 **49 CFR Class:** Not pertinent
8.3 **49 CFR Package Group:** Not listed.
8.4 **Marine Pollutant:** No
8.5 **NFPA Hazard Classification:**

Category	Classification
Health Hazard (Blue).....	2
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:** 100.16
9.3 **Boiling Point at 1 atm:** 261°F = 127°C = 400°K
9.4 **Freezing Point:** -70.4°F = -56.9°C = 216.3°K
9.5 **Critical Temperature:** Not pertinent
9.6 **Critical Pressure:** Not pertinent
9.7 **Specific Gravity:** 0.812 at 20°C (liquid)
9.8 **Liquid Surface Tension:** 25.49 dynes/cm = 0.02549 N/m at 20°C
9.9 **Liquid Water Interfacial Tension:** 9.73 dynes/cm = 0.00973 N/m at 20°C
9.10 **Vapor (Gas) Specific Gravity:** 3.5
9.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent
9.12 **Latent Heat of Vaporization:** 148 Btu/lb = 82 cal/g = 3.4 X 10⁵ J/kg
9.13 **Heat of Combustion:** -16,100 Btu/lb = -8,940 cal/g = -374 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
40	51.470	35	0.550	30	1.038	52	0.711
45	51.320	40	0.550	40	1.029	54	0.699
50	51.170	45	0.550	50	1.019	56	0.688
55	51.030	50	0.550	60	1.010	58	0.677
60	50.880	55	0.550	70	1.001	60	0.666
65	50.730	60	0.550	80	0.992	62	0.655
70	50.580	65	0.550	90	0.982	64	0.645
75	50.430	70	0.550	100	0.973	66	0.635
80	50.280	75	0.550	110	0.964	68	0.625
85	50.120	80	0.550	120	0.955	70	0.615
90	49.970	85	0.550	130	0.945	72	0.606
95	49.820	90	0.550	140	0.936	74	0.596
100	49.660	95	0.550	150	0.927	76	0.587
105	49.510	100	0.550	160	0.918	78	0.578
110	49.350			170	0.908	80	0.570
115	49.190			180	0.899	82	0.561
120	49.030			190	0.890	84	0.553
125	48.870			200	0.881	86	0.545
130	48.710			210	0.871		
				220	0.862		

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
68	1.400	60	0.231	60	0.00415		N
		70	0.306	70	0.00540		O
		80	0.402	80	0.00695		T
		90	0.522	90	0.00885		
		100	0.671	100	0.01119		P
		110	0.856	110	0.01401		E
		120	1.082	120	0.01744		R
		130	1.357	130	0.02147		T
		140	1.689	140	0.02628		I
		150	2.088	150	0.03195		N
		160	2.563	160	0.03859		E
		170	3.125	170	0.04631		N
		180	3.788	180	0.05525		T
		190	4.564	190	0.06555		
		200	5.468	200	0.07734		
		210	6.516	210	0.09078		
		220	7.724	220	0.10600		
		230	9.112	230	0.12330		
		240	10.700	240	0.14270		
		250	12.500	250	0.16440		
		260	14.550	260	0.18860		