

METHYL ISOBUTYL KETONE

MIK

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Hexone Isobutyl methyl ketone Isopropyl acetone 4-Methyl-2-pentanone MIBK MIK		Watery liquid Colorless Mild pleasant odor
Floats and mixes slowly with water. Flammable, irritating vapor is produced.		
Keep people away. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Avoid contact with liquid and vapor. Notify local health and pollution control agencies.		
Fire	FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.	
Exposure	CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. If inhaled, will cause dizziness or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. 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.	
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.	

1. CORRECTIVE RESPONSE ACTIONS

- Dilute and disperse
- Stop discharge
- Contain
- Collection Systems: Skim
- Clean shore line
- Salvage waterfowl

2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: 18; Ketone
- 2.2 Formula: (CH₃)₂CHCH₂COCH₃
- 2.3 IMO/UN Designation: 3.2/1245
- 2.4 DOT ID No.: 1245
- 2.5 CAS Registry No.: 108-10-1
- 2.6 NAERG Guide No.: 127
- 2.7 Standard Industrial Trade Classification: 51625

3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Organic canister or air pack; rubber gloves; goggles or face shield.
- 3.2 **Symptoms Following Exposure:** Vapor causes irritation of eyes and nose; high concentrations cause anesthesia and depression. Liquid dries out skin and may cause dermatitis; irritates eyes but does not injure them.
- 3.3 **Treatment of Exposure:** INHALATION: remove to fresh air, give artificial respiration if needed; call a doctor. SKIN OR EYES: wash eyes thoroughly with water; wash skin with water until irritation stops.
- 3.4 **TLV-TWA:** 50 ppm
- 3.5 **TLV-STEL:** 75 ppm
- 3.6 **TLV-Ceiling:** Not listed.
- 3.7 **Toxicity by Ingestion:** Grade 2; LD₅₀ = 0.5 to 5 g/kg (rat)
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** None
- 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:** 0.47 ppm
- 3.13 **IDLH Value:** 500 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:** 75°F O.C. 73°F C.C.
- 4.2 **Flammable Limits in Air:** 1.4%-7.5%
- 4.3 **Fire Extinguishing Agents:** Alcohol foam, dry chemical, or carbon dioxide
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Water may be ineffective
- 4.5 **Special Hazards of Combustion Products:** Irritating vapors are generated when heated.
- 4.6 **Behavior in Fire:** Vapors may travel a considerable distance and ignite.
- 4.7 **Auto Ignition Temperature:** 854°F
- 4.8 **Electrical Hazards:** Class I, Group D
- 4.9 **Burning Rate:** Currently not available
- 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:** 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:** Currently not available
- 6.2 **Waterfowl Toxicity:** Currently not available
- 6.3 **Biological Oxygen Demand (BOD):** (theor.) 1.8%, 0.5 day; (theor.) 12%, 5 days
- 6.4 **Food Chain Concentration Potential:** None
- 6.5 **GESAMP Hazard Profile:** Bioaccumulation: 0
Damage to living resources: 1
Human Oral hazard: 1
Human Contact hazard: 1
Reduction of amenities: X

7. SHIPPING INFORMATION

- 7.1 **Grades of Purity:** 99+%
- 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:** D
- 7.6 **Ship Type:** Data 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).....	2
Flammability (Red).....	3
Instability (Yellow).....	0
- 8.6 **EPA Reportable Quantity:** 5000 pounds
- 8.7 **EPA Pollution Category:** D
- 8.8 **RCRA Waste Number:** U161
- 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:** 241.2°F = 116.2 = 389.4°K
- 9.4 **Freezing Point:** -119°F = -84°C = 189°K
- 9.5 **Critical Temperature:** 568.9°F = 298.3°C = 571.5°K
- 9.6 **Critical Pressure:** 475 psia = 32.3 atm = 3.27 MN/m²
- 9.7 **Specific Gravity:** 0.802 at 20°C (liquid)
- 9.8 **Liquid Surface Tension:** 23.6 dynes/cm = 0.0236 N/m at 20°C
- 9.9 **Liquid Water Interfacial Tension:** 15.7 dynes/cm = 0.0157 N/m at 22.7°C
- 9.10 **Vapor (Gas) Specific Gravity:** Not pertinent
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** 1.061
- 9.12 **Latent Heat of Vaporization:** 149 Btu/lb = 82.5 cal/g = 3.45 X 10⁵ J/kg
- 9.13 **Heat of Combustion:** (est.) -10,400 Btu/lb = -5,800 cal/g = -242 X 10⁵ J/kg
- 9.14 **Heat of Decomposition:** Not pertinent
- 9.15 **Heat of Solution:** (est.) -9 Btu/lb = -5 cal/g = -0.2 X 10⁵ J/kg
- 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:** 0.8 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	51.150	-30	0.426		N O T P E R T I N E N T	77	3.800
40	50.990	-20	0.429				
45	50.830	-10	0.432				
50	50.660	0	0.435				
55	50.500	10	0.438				
60	50.340	20	0.441				
65	50.170	30	0.444				
70	50.010	40	0.447				
75	49.850	50	0.450				
80	49.680	60	0.453				
85	49.520	70	0.457				
90	49.360	80	0.460				
95	49.200	90	0.463				
100	49.030	100	0.466				
105	48.870	110	0.469				
110	48.710	120	0.472				
115	48.540	130	0.475				
120	48.380	140	0.478				
		150	0.481				
		160	0.484				
		170	0.487				
		180	0.490				
		190	0.493				
		200	0.496				
		210	0.499				

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	2.000	40	0.109	40	0.00203	0	0.306
		50	0.157	50	0.00287	25	0.320
		60	0.222	60	0.00398	50	0.334
		70	0.308	70	0.00543	75	0.348
		80	0.422	80	0.00730	100	0.361
		90	0.569	90	0.00967	125	0.374
		100	0.757	100	0.01263	150	0.387
		110	0.995	110	0.01629	175	0.400
		120	1.290	120	0.02077	200	0.412
		130	1.655	130	0.02619	225	0.424
		140	2.101	140	0.03270	250	0.436
		150	2.641	150	0.04042	275	0.448
		160	3.289	160	0.04952	300	0.460
		170	4.060	170	0.06017	325	0.471
		180	4.971	180	0.07251	350	0.482
		190	6.039	190	0.08674	375	0.493
		200	7.284	200	0.10300	400	0.503
		210	8.724	210	0.12160	425	0.514
		220	10.380	220	0.14250	450	0.524
		230	12.280	230	0.16610	475	0.534
		240	14.430	240	0.19250	500	0.544
250	16.880	250	0.22190	525	0.553		
260	19.630	260	0.25450	550	0.562		
270	22.710	270	0.29040	575	0.572		
280	26.160	280	0.33000	600	0.581		
290	29.990	290	0.37320				