METHYL BUTYRATE

MBU

CAUTIONARY RESPONSE INFORMATION

Common Synonyms		
Butanoic acid, methyl ester Butyric acid, methyl ester Methyl-n-butanoate Methyl-n-butyrate	Liquid Floats on water.	Colorless

Keep people away. Avoid contact with vapor or liquid.
Wear self-contained breathing apparatus and full protective clothing.
Shut off sources of ignition. Call fire department.
Notify local health and pollution control agencies.

Fire

FLAMMABLE
Emits toxic fumes under fire conditions.
Flashback may occur along vapor trail.
Wear self-contained breathing apparatus and full protective clothing.
Extinguish with water spray, CO_2, dry chemical, or foam.

Exposure

CALL FOR MEDICAL AID

VAPOR
Irritating to the eyes, nose, and throat.
May be harmful if inhaled or absorbed through the skin.
Remove to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to the eyes and skin.
May be harmful if swallowed or absorbed through the skin.
IF IN EYES: immediately flush with plenty of water for at least 15 minutes.
Remove contaminated clothing and shoes. Wash affected areas with soap and water.
IF SWALLOWED: do nothing except keep victim warm.
DO NOT INDUCE VOMITING

Water Pollution

Effects of low concentrations on aquatic life are not known.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. CORRECTIVE RESPONSE ACTIONS

Stop discharge

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 34; Esters
2.2 Formula: $C_4H_7OOCH_3$
2.3 IMO/UN Designation: 3.2/1237
2.4 DOT ID No.: 1237
2.5 CAS Registry No.: 623-42-7
2.6 NAERG Guide No.: 129
2.7 Standard Industrial Trade Classification: 51375

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Approved respirator, chemical safety goggles, chemical-resistant gloves, other protective clothing.
3.2 Symptoms Following Exposure: Irritating to the eyes, nose, throat, upper respiratory tract, and skin.
3.3 Treatment of Exposure: Call a physician. EYES: Immediately flush with water for at least 15 minutes. SKIN: Remove contaminated clothes and shoes, wash affected areas with soap and water. INHALATION: Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. INGESTION: Do nothing except keep victim warm. DO NOT INDUCE VOMITING.
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_{50} = 3.38 g/kg (rat)
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: 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

4. FIRE HAZARDS

4.1 Flash Point: 57°F C.C.
4.2 Flammable Limits in Air: 0.9-3.5%
4.3 Fire Extinguishing Agents: Alcohol foam, CO_2, dry chemical, water spray.
4.4 Fire Extinguishing Agents Not to Be Used: Currently not available
4.5 Special Hazards of Combustion Products: Currently not available
4.6 Behavior in Fire: Currently not available
4.7 Auto Ignition Temperature: Currently not available
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: Currently not available
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 30.9 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 10.0 (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: Dry lime, soda ash
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: Currently not available
6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: (2)
Human Oral hazard: 1
Human Contact hazard: I
Reduction of amenities: X

7. SHIPPING INFORMATION

7.1 Grades of Purity: 99%
7.2 Storage Temperature: Currently not available
7.3 Inert Atmosphere: None
7.4 Venting: None
7.5 IMO Pollution Category: (C)
7.6 Ship Type: 3
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: 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: 102.13
9.3 Boiling Point at 1 atm: 216°F = 102.3°C = 376°K
9.4 Freezing Point: -121°F = -84.8°C = 188°K
9.5 Critical Temperature: 538.3°F = 281.3°C = 554.5°K
9.6 Critical Pressure: 34.2 atm
9.7 Specific Gravity: 0.8984 at 20°C
9.8 Liquid Surface Tension: Currently not available
9.9 Liquid Water Interfacial Tension: Currently not available
9.10 Vapor (Gas) Specific Gravity: 3.53
9.11 Ratio of Specific Heats of Vapor (Gas): Currently not available
9.12 Latent Heat of Vaporization: 143.6 Btu/lb = 79.8 cal/g = 3.3 X 10^5 J/kg
9.13 Heat of Combustion: -12209 Btu/lb = -6783 cal/g = -284 X 10^5 J/kg
9.14 Heat of Decomposition: Currently not available
9.15 Heat of Solution: Currently not available
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: 1.2 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
68	56.090		CURRENTLY NOT AVAILABLE		CURRENTLY NOT AVAILABLE	60	0.623
						65	0.600
						70	0.578
						75	0.558
						80	0.539
						85	0.521
						90	0.505
						95	0.489
						100	0.474
						105	0.460
						110	0.446
						115	0.433
						120	0.421
						125	0.409
						130	0.397
						135	0.386
						140	0.376
						145	0.366
						150	0.356
						155	0.346
						160	0.337
						165	0.328
						170	0.319
						175	0.311
						180	0.303

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	1.700	-10	0.038		CURRENTLY NOT AVAILABLE	0	0.265
		0	0.050			25	0.276
		10	0.067			50	0.286
		20	0.088			75	0.297
		30	0.116			100	0.307
		40	0.154			125	0.317
		50	0.203			150	0.327
		60	0.269			175	0.337
		70	0.356			200	0.346
		80	0.470			225	0.356
		90	0.622			250	0.365
		100	0.822			275	0.374
		110	1.087			300	0.383
		120	1.437			325	0.392
		130	1.900			350	0.401
		140	2.513			375	0.410
		150	3.323			400	0.418
		160	4.394			425	0.427
		170	5.809			450	0.435
		180	7.681			475	0.443
		190	10.157			500	0.451
		200	13.429			525	0.459
						550	0.467
						575	0.474
						600	0.482