METHYL AMYL ALCOHOL

MAA

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
Isobutylmethylcarbinol
Isobutyl methylmethanol
MAOH
Methyl isobutyl carbinol
4-Methyl-2-pentanol
MIC

Oily liquid | Colorless | Mild alcohol odor

Floats on water. Irritating vapor is produced.

Notify local health and pollution control agencies.
Keep people away.
Call fire department.
Avoid contact with liquid and vapor.

Fire

Combustible.
Extinguish with dry chemical, alcohol foam, or carbon dioxide.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause dizziness or difficult breathing.
Harmful if skin is exposed.
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
Chemical and Physical Treatment:
Absorb
Clean shore line
Salvage waterfowl

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 20; Alcohol, glycol
2.2 Formula: $(CH_3)_2CHCH_2CH(OH)CH_3$
2.3 IMO/UN Designation: 3.3/2053
2.4 DOT ID No.: 2053
2.5 CAS Registry No.: 108-11-2
2.6 NAERG Guide No.: 129
2.7 Standard Industrial Trade Classification: 51219

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Air pack or organic canister mask; rubber gloves; goggles or face shield.
3.2 Symptoms Following Exposure: Vapor irritates eyes and nose. May cause anesthesia. Prolonged contact with liquid causes irritation and cracking of skin, and irritates eyes.
3.3 Treatment of Exposure: INHALATION: remove victim to fresh air; give artificial respiration if needed; call a doctor. SKIN: flush with water. EYES: flush with water for at least 15 min.; consult a doctor.
3.4 TLV-TWA: 25 ppm
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: 40 ppm.
3.7 Toxicity by Ingestion: Grade 2; LD_{50} = 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 moderate irritation such that personnel will find high concentrations unpleasant. 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: 400 ppm
3.14 OSHA PEL-TWA: 25 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: 120-130°F O.C.; 106°F C.C.
4.2 Flammable Limits in Air: 1.0%-5.5%
4.3 Fire Extinguishing Agents: Alcohol 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: 583°F (calc.)
4.8 Electrical Hazards: Not pertinent
4.9 Burning Rate: 4.7 mm/min.
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 42.8 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 13.0 (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: 370 ppm/24 hr/brine shrimp/TL_M
6.2 Waterfowl Toxicity: Currently not available
6.3 Biological Oxygen Demand (BOD): 50% of theoretical in 5 days, freshwater
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: Currently not available
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: No requirement
7.4 Venting: Open (flame arrester)
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: III
8.4 Marine Pollutant: No
8.5 NFPA Hazard Classification:

Category	Classification
Health Hazard (Blue).....	2
Flammability (Red).....	2
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: 102.18
9.3 Boiling Point at 1 atm: 269.2°F = 131.8°C = 405°K
9.4 Freezing Point: <–130°F = <–90°C = <183°K
9.5 Critical Temperature: 555.8°F = 291°C = 564.2°K
9.6 Critical Pressure: Not pertinent
9.7 Specific Gravity: 0.807 at 20°C (liquid)
9.8 Liquid Surface Tension: 22.8 dynes/cm = 0.0228 N/m at 20°C
9.9 Liquid Water Interfacial Tension: (est.) 40 dynes/cm = 0.04 N/m at 20°C
9.10 Vapor (Gas) Specific Gravity: Not pertinent
9.11 Ratio of Specific Heats of Vapor (Gas): 1.053
9.12 Latent Heat of Vaporization: 162 Btu/lb = 90.1 cal/g = 3.77 X 10^5 J/kg
9.13 Heat of Combustion: –16,640 Btu/lb = –9240 cal/g = –387 X 10^5 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	
Temperature (degrees F)	Pounds per cubic foot
35	51.690
40	51.480
45	51.270
50	51.060
55	50.850
60	50.650
65	50.440
70	50.230
75	50.020
80	49.810
85	49.610
90	49.400
95	49.190
100	48.980
105	48.770
110	48.570
115	48.360
120	48.150
125	47.940
130	47.730
135	47.520
140	47.320

9.21 LIQUID HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
34	0.501
36	0.502
38	0.503
40	0.504
42	0.505
44	0.507
46	0.508
48	0.509
50	0.510
52	0.511
54	0.512
56	0.513
58	0.514
60	0.515
62	0.517
64	0.518
66	0.519
68	0.520
70	0.521
72	0.522
74	0.523
76	0.524
78	0.525
80	0.527
82	0.528
84	0.529

9.22 LIQUID THERMAL CONDUCTIVITY	
Temperature (degrees F)	British thermal unit inch per hour-square foot-F
50	1.040
52	1.040
54	1.040
56	1.040
58	1.040
60	1.040
62	1.040
64	1.040
66	1.040
68	1.040
70	1.040
72	1.040
74	1.040
76	1.040
78	1.040
80	1.040
82	1.040
84	1.040

9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Centipoise
77	3.800

9.24 SOLUBILITY IN WATER	
Temperature (degrees F)	Pounds per 100 pounds of water
68	1.700

9.25 SATURATED VAPOR PRESSURE	
Temperature (degrees F)	Pounds per square inch
60	0.073
70	0.103
80	0.145
90	0.200
100	0.274
110	0.371
120	0.497
130	0.659
140	0.864
150	1.124
160	1.450
170	1.854
180	2.353
190	2.964
200	3.707
210	4.605
220	5.682
230	6.969
240	8.497
250	10.300
260	12.420
270	14.900
280	17.780
290	21.120
300	24.970

9.26 SATURATED VAPOR DENSITY	
Temperature (degrees F)	Pounds per cubic foot
60	0.00133
70	0.00186
80	0.00255
90	0.00347
100	0.00467
110	0.00620
120	0.00816
130	0.01063
140	0.01372
150	0.01756
160	0.02227
170	0.02803
180	0.03502
190	0.04343
200	0.05349
210	0.06545
220	0.07958
230	0.09619
240	0.11560
250	0.13820
260	0.16430
270	0.19440
280	0.22880
290	0.26820
300	0.31290

9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
0	0.347
25	0.362
50	0.377
75	0.391
100	0.405
125	0.420
150	0.433
175	0.447
200	0.460
225	0.473
250	0.486
275	0.499
300	0.511
325	0.523
350	0.535
375	0.547
400	0.558
425	0.569
450	0.580
475	0.591
500	0.602
525	0.612
550	0.622
575	0.632
600	0.642