METHYL ACETATE

MTT

CAUTIONARY RESPONSE INFORMATION

Common Synonyms
Acetic acid, methyl ester

Liquid Colorless Mild sweet odor

Mixes with water. Flammable, irritating vapor is produced.

Evacuate.
Keep people away.
Avoid inhalation.
Shut off ignition sources, call fire department.
Stay upwind, use water spray to ``knock down'' vapor.
Notify local health and pollution control agencies.
Protect water intakes.

Fire

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.

Exposure

Call for medical aid.

VAPOR
Irritating to eyes, nose and throat.
If inhaled will cause headache, or dizziness.
Move victim to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
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.
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

2. CHEMICAL DESIGNATIONS

2.1 CG Compatibility Group: 34; Ester
2.2 Formula: CH_3COOCH_3
2.3 IMO/UN Designation: 3.2/1231
2.4 DOT ID No.: 1231
2.5 CAS Registry No.: 79-20-9
2.6 NAERG Guide No.: 129
2.7 Standard Industrial Trade Classification: 51372

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Air mask or organic canister mask; goggles or face shield.
3.2 Symptoms Following Exposure: (Very similar to those of methyl alcohol, which constitutes 20% of commercial grade.) Inhalation causes headache, fatigue, and drowsiness; high concentrations can produce central nervous system depression and optic nerve damage. Liquid irritates eyes and may cause defatting and cracking of skin. Ingestion causes headache, dizziness, drowsiness, fatigue; may cause severe eye damage.
3.3 Treatment of Exposure: INHALATION: remove victim from affected area; if breathing has ceased, apply artificial respiration; call doctor. EYES: irrigate thoroughly with water for 15 min. and call doctor. SKIN: wash affected area with water. INGESTION: get medical attention for methyl alcohol poisoning.
3.4 TLV-TWA: 200 ppm
3.5 TLV-STEL: Not listed.
3.6 TLV-Ceiling: 250 ppm
3.7 Toxicity by Ingestion: Grade 2; oral LD_{50} = 3,700 mg/kg (rabbit)
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Optic nerve may be damaged following overexposure to vapor or liquid.
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: No appreciable hazard. Practically harmless to the skin.
3.12 Odor Threshold: Currently not available
3.13 IDLH Value: 3,100 ppm
3.14 OSHA PEL-TWA: 200 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: 22°F O.C. 14°F C.C.
4.2 Flammable Limits in Air: 3.1%-16%
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: Not pertinent
4.6 Behavior in Fire: Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back.
4.7 Auto Ignition Temperature: 935°F
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: 3.7 mm/min.
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 21.4 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 6.0 (calc.)
4.14 Minimum Oxygen Concentration for Combustion (MOCC): N_2 diluent: 10.9-11.0%; CO_2 diluent: 13.5%

5. CHEMICAL REACTIVITY

5.1 Reactivity with Water: Reacts slowly to form acetic acid and methyl alcohol; the reaction is not violent.
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): Currently not available
6.4 Food Chain Concentration Potential: None
6.5 GESAMP Hazard Profile:
Bioaccumulation: 0
Damage to living resources: 0
Human Oral hazard: 1
Human Contact hazard: 0
Reduction of amenities: 0

7. SHIPPING INFORMATION

7.1 Grades of Purity: 78-82%; remainder is methyl alcohol.
7.2 Storage Temperature: Ambient
7.3 Inert Atmosphere: No requirement
7.4 Venting: Pressure-vacuum
7.5 IMO Pollution Category: Currently not available
7.6 Ship Type: Currently 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).....	1
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: 74.1
9.3 Boiling Point at 1 atm: 134.6°F = 57.0°C = 330.2°K
9.4 Freezing Point: –145.3°F = 98.5°C = 174.7°K
9.5 Critical Temperature: 452.7°F = 233.7°C = 506.9°K
9.6 Critical Pressure: 666 psia = 45.3 atm = 4.60 MN/m_2
9.7 Specific Gravity: 0.927 at 20°C (liquid)
9.8 Liquid Surface Tension: 24 dynes/cm = 0.024 N/m at 20°C
9.9 Liquid Water Interfacial Tension: (est.) 30 dynes/cm = 0.030 N/m at 20°C
9.10 Vapor (Gas) Specific Gravity: 2.8
9.11 Ratio of Specific Heats of Vapor (Gas): 1.1192
9.12 Latent Heat of Vaporization: 174 Btu/lb = 97 cal/g = 4.1 X 10^5 J/kg
9.13 Heat of Combustion: 9,260 Btu/lb = 5,150 cal/g = 215 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: 4.6 psia

NOTES

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9.20 SATURATED LIQUID DENSITY	
Temperature (degrees F)	Pounds per cubic foot
0	61.170
10	60.680
20	60.200
30	59.710
40	59.220
50	58.740
60	58.250
70	57.770
80	57.281
90	56.800
100	56.310
110	55.830
120	55.340
130	54.860

9.21 LIQUID HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
15	0.482
20	0.483
25	0.485
30	0.486
35	0.488
40	0.489
45	0.491
50	0.492
55	0.494
60	0.496
65	0.497
70	0.499
75	0.500
80	0.502
85	0.503
90	0.505
95	0.506
100	0.508

9.22 LIQUID THERMAL CONDUCTIVITY	
Temperature (degrees F)	British thermal unit inch per hour-square foot-F
30	1.145
35	1.139
40	1.133
45	1.126
50	1.120
55	1.114
60	1.107
65	1.101
70	1.095
75	1.088
80	1.082
85	1.076
90	1.069
95	1.063
100	1.057
105	1.050

9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Centipoise
40	0.448
50	0.417
60	0.390
70	0.366
80	0.344
90	0.324
100	0.306
110	0.289
120	0.274
130	0.260

9.24 SOLUBILITY IN WATER	
Temperature (degrees F)	Pounds per 100 pounds of water
68	24.350

9.25 SATURATED VAPOR PRESSURE	
Temperature (degrees F)	Pounds per square inch
35	1.255
40	1.453
45	1.677
50	1.931
55	2.216
60	2.537
65	2.897
70	3.300
75	3.749
80	4.250
85	4.807
90	5.424
95	6.108
100	6.863
105	7.695
110	8.611
115	9.617
120	10.720
125	11.930
130	13.250
135	14.690
140	16.260

9.26 SATURATED VAPOR DENSITY	
Temperature (degrees F)	Pounds per cubic foot
35	0.01752
40	0.02007
45	0.02294
50	0.02615
55	0.02972
60	0.03370
65	0.03812
70	0.04301
75	0.04841
80	0.05437
85	0.06092
90	0.06812
95	0.07601
100	0.08465
105	0.09407
110	0.10430
115	0.11550
120	0.12770
125	0.14080
130	0.15510
135	0.17050
140	0.18710

9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
0	0.230
25	0.238
50	0.246
75	0.254
100	0.262
125	0.270
150	0.278
175	0.286
200	0.294
225	0.302
250	0.311
275	0.319
300	0.327
325	0.335
350	0.343
375	0.351
400	0.359
425	0.367
450	0.375
475	0.383
500	0.392
525	0.400
550	0.408
575	0.416
600	0.424