ETHYL ACETOACETATE

EAA

CAUTIONARY RESPONSE INFORMATION

Common Synonyms			
Acetoacetic acid, ethyl ester Acetoacetic ester Diacetic ether EAA Ethyl 3-oxobutanoate	Liquid Mixes with water.	Colorless	Pleasant fruity odor

Keep people away.
Shut off ignition sources and call fire department.
Notify local health and pollution control agencies.
Protect water intakes.

Fire	Combustible. Extinguish with dry chemicals, alcohol foam, or carbon dioxide.
Exposure	Call for medical aid. LIQUID Irritating to 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. 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: Not listed.
2.2 Formula: $CH_3COCH_2COOC_2H_5$
2.3 IMO/UN Designation: Not listed
2.4 DOT ID No.: Not listed
2.5 CAS Registry No.: 141-97-9
2.6 NAERG Guide No.: Not listed
2.7 Standard Industrial Trade Classification: 51372

3. HEALTH HAZARDS

3.1 Personal Protective Equipment: Goggles or face shield; rubber gloves.
3.2 Symptoms Following Exposure: Liquid may cause mild irritation of eyes.
3.3 Treatment of Exposure: EYES: flush with water for 15 min.
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; oral LD_{50} = 3,980 mg/kg (rat).
3.8 Toxicity by Inhalation: Currently not available.
3.9 Chronic Toxicity: Currently not available
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: 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: 176°F O.C. 135°F C.C.
4.2 Flammable Limits in Air: 1.4% 9.5%
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: Not pertinent
4.7 Auto Ignition Temperature: 563°F
4.8 Electrical Hazards: Currently not available
4.9 Burning Rate: 2.4 mm/min.
4.10 Adiabatic Flame Temperature: Currently not available
4.11 Stoichometric Air to Fuel Ratio: 33.3 (calc.)
4.12 Flame Temperature: Currently not available
4.13 Combustion Molar Ratio (Reactant to Product): 11.0 (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): Currently not available
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: I
Reduction of amenities: X

7. SHIPPING INFORMATION

7.1 Grades of Purity: 98+%
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 avaialable
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).....	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: 130.1
9.3 Boiling Point at 1 atm: 363°F = 184°C = 457°K
9.4 Freezing Point: < –112°F = < –80°C = <193°K
9.5 Critical Temperature: Not pertinent
9.6 Critical Pressure: Not pertinent
9.7 Specific Gravity: 1.028 at 20°C (liquid)
9.8 Liquid Surface Tension: 32.5 dynes/cm = 0.035 N/m at 20°C
9.9 Liquid Water Interfacial Tension: (est.) 35 dynes/cm = 0.035 N/m at 20°C
9.10 Vapor (Gas) Specific Gravity: 4.48
9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
9.12 Latent Heat of Vaporization: 160 Btu/lb = 91 cal/g = 3.8 X 10^5 J/kg
9.13 Heat of Combustion: –9,349 Btu/lb = –5,194 cal/g = –217.3 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
34	65.349
36	65.280
38	65.209
40	65.139
42	65.070
44	65.000
46	64.929
48	64.860
50	64.790
52	64.719
54	64.660
56	64.589
58	64.520
60	64.450
62	64.379
64	64.309
66	64.240
68	64.169
70	64.099
72	64.030
74	63.960
76	63.890
78	63.820
80	63.750
82	63.680
84	63.620

9.21 LIQUID HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
35	0.432
40	0.435
45	0.439
50	0.442
55	0.445
60	0.449
65	0.452
70	0.455
75	0.459
80	0.462
85	0.465
90	0.469
95	0.472
100	0.475
105	0.479
110	0.482
115	0.485
120	0.489

9.22 LIQUID THERMAL CONDUCTIVITY	
Temperature (degrees F)	British thermal unit inch per hour-square foot-F
42	1.081
44	1.081
46	1.081
48	1.081
50	1.081
52	1.081
54	1.081
56	1.081
58	1.081
60	1.081
62	1.081
64	1.081
66	1.081
68	1.081
70	1.081
72	1.081
74	1.081
76	1.081
78	1.081
80	1.081
82	1.081
84	1.081
86	1.081
88	1.081

9.23 LIQUID VISCOSITY	
Temperature (degrees F)	Centipoise
34	4.414
36	4.161
38	3.925
40	3.705
42	3.498
44	3.304
46	3.122
48	2.952
50	2.792
52	2.642
54	2.501
56	2.369
58	2.245
60	2.128
62	2.018
64	1.914
66	1.816
68	1.725
70	1.638
72	1.556
74	1.479
76	1.407

9.24 SOLUBILITY IN WATER	
Temperature (degrees F)	Pounds per 100 pounds of water
62	13.000

9.25 SATURATED VAPOR PRESSURE	
Temperature (degrees F)	Pounds per square inch
130	0.208
140	0.268
150	0.341
160	0.431
170	0.541
180	0.674
190	0.834
200	1.026
210	1.253
220	1.522
230	1.839
240	2.209
250	2.640
260	3.139
270	3.716
280	4.378
290	5.135
300	5.999
310	6.979
320	8.089
330	9.339
340	10.740
350	12.320
360	14.080

9.26 SATURATED VAPOR DENSITY	
Temperature (degrees F)	Pounds per cubic foot
130	0.00429
140	0.00541
150	0.00678
160	0.00843
170	0.01042
180	0.01277
190	0.01556
200	0.01884
210	0.02268
220	0.02714
230	0.03231
240	0.03826
250	0.04508
260	0.05287
270	0.06171
280	0.07173
290	0.08302
300	0.09571
310	0.10990
320	0.12570
330	0.14330
340	0.16280
350	0.18440
360	0.20810

9.27 IDEAL GAS HEAT CAPACITY	
Temperature (degrees F)	British thermal unit per pound-F
	NOT PERTINENT