

ACETALDEHYDE

AAD

CAUTIONARY RESPONSE INFORMATION				4. FIRE HAZARDS	7. SHIPPING INFORMATION								
Common Synonyms Acetic aldehyde Ethanal Ethyl aldehyde	Watery liquid Colorless Sharp, fruity odor Floats and mixes with water. Flammable, irritating vapor is produced. Boiling point is 69°F.												
<p>Avoid contact with liquid and vapor. Keep people away. Wear goggles and self-contained breathing apparatus. Shut off ignition sources and call fire department. Stay upwind and use water spray to "knock down" vapor. Stop discharge if possible. Isolate and remove discharged material. Notify local health and pollution control agencies.</p>				4.1 Flash Point: -36°F C.C.; -58°F O.C. 4.2 Flammable Limits in Air: 4%-60% 4.3 Fire Extinguishing Agents: Dry chemical, alcohol foam, carbon dioxide, or water fog. 4.4 Fire Extinguishing Agents Not to Be Used: Water and foam may be ineffective. 4.5 Special Hazards of Combustion Products: Produces irritating vapor when heated 4.6 Behavior in Fire: Vapors are heavier than air and may travel a considerable distance to a source of ignition and flash back. 4.7 Auto Ignition Temperature: 365°F, 300°C, 347 °F 4.8 Electrical Hazards: Class I, Group C 4.9 Burning Rate: 3.3 mm/min. 4.10 Adiabatic Flame Temperature: Currently not available 4.11 Stoichiometric Air to Fuel Ratio: 7.800 (Est.) 4.12 Flame Temperature: Currently not available 4.13 Combustion Molar Ratio (Reactant to Product): Currently not available 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed	7.1 Grades of Purity: >99% 7.2 Storage Temperature: Ambient 7.3 Inert Atmosphere: Inerted 7.4 Venting: Safety relief 7.5 IMO Pollution Category: C 7.6 Ship Type: 2 7.7 Barge Hull Type: 2								
<p>Fire FLAMMABLE. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles and self-contained breathing apparatus. Combat fires from safe distance or protected location. Extinguish with dry chemical, alcohol foam, or carbon dioxide. Water may be ineffective on fire. Cool exposed containers with water.</p>				8. HAZARD CLASSIFICATIONS 8.1 49 CFR Category: Flammable liquid 8.2 49 CFR Class: 3 8.3 49 CFR Package Group: I 8.4 Marine Pollutant: No 8.5 NFPA Hazard Classification: <table> <thead> <tr> <th>Category</th> <th>Classification</th> </tr> </thead> <tbody> <tr> <td>Health Hazard (Blue)</td> <td>3</td> </tr> <tr> <td>Flammability (Red)</td> <td>4</td> </tr> <tr> <td>Instability (Yellow)</td> <td>2</td> </tr> </tbody> </table>		Category	Classification	Health Hazard (Blue)	3	Flammability (Red)	4	Instability (Yellow)	2
Category	Classification												
Health Hazard (Blue)	3												
Flammability (Red)	4												
Instability (Yellow)	2												
<p>Exposure CALL FOR MEDICAL AID. VAPOR Irritating to eyes, nose and throat. If inhaled, will cause nausea, vomiting, headache, difficult breathing, or loss of consciousness. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Will burn 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.</p>				9. PHYSICAL & CHEMICAL PROPERTIES 9.1 Physical State at 15° C and 1 atm: Liquid 9.2 Molecular Weight: 44.05 9.3 Boiling Point at 1 atm: 68.7°F = 20.4°C = 293.6°K 9.4 Freezing Point: -189°F = -123°C = 150°K 9.5 Critical Temperature: 370.4°F = 188°C = 461.2°K 9.6 Critical Pressure: 820 psia = 56 atm = 5.7 MN/m² 9.7 Specific Gravity: 0.780 at 20°C (liquid) 9.8 Liquid Surface Tension: Not pertinent 9.9 Liquid Water Interfacial Tension: Not pertinent 9.10 Vapor (Gas) Specific Gravity: 1.5 9.11 Ratio of Specific Heats of Vapor (Gas): 1.182 9.12 Latent Heat of Vaporization: 245 Btu/lb = 136 cal/g = 5.69 X 10⁵ J/kg 9.13 Heat of Combustion: -10,600 Btu/lb = -5890 cal/g = -246.4 X 10⁵ 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: 25.6 psia									
<p>Water Pollution HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.</p>				6. WATER POLLUTION 6.1 Aquatic Toxicity: 124-140 ppm/48 hr/golden orfe/LC50 53 ppm/96 hr/bluegill sunfish/LC50/ 53 ppm/96 hr/sunfish/TL ₅₀ /fresh water 70 ppm/24 hr/pin perch/TL ₅₀ /salt water 6.2 Waterfowl Toxicity: Currently not available 6.3 Biological Oxygen Demand (BOD): 93-127%, 5 days 6.4 Food Chain Concentration Potential: None 6.5 GESAMP Hazard Profile: Bioaccumulation: T Damage to living resources: 2 Human Oral hazard: 1 Human Contact hazard: II Reduction of amenities: XX									
<p>1. CORRECTIVE RESPONSE ACTIONS Dilute and disperse Stop discharge</p>				NOTES									
<p>2. CHEMICAL DESIGNATIONS 2.1 CG Compatibility Group: 19; Aldehyde 2.2 Formula: CH₃CHO 2.3 IMO/UN Designation: 3.1/1089 2.4 DOT ID No.: 1089 2.5 CAS Registry No.: 75-07-0 2.6 NAERG Guide No.: 129 2.7 Standard Industrial Trade Classification: 51372</p>													
<p>3. HEALTH HAZARDS</p> <p>3.1 Personal Protective Equipment: Rubber gloves, eye goggles, and other equipment to prevent any contact with body. Organic canister or air pack as required.</p> <p>3.2 Symptoms Following Exposure: Breathing vapors will be irritating and may cause nausea, vomiting, headache, and unconsciousness. Contact with eyes may cause burns and eye damage. Skin contact from clothing wet with the chemical causes burns or severe irritation.</p> <p>3.3 Treatment of Exposure: INHALATION: remove victim to fresh air; if breathing has stopped, give artificial respiration; if breathing is difficult, give oxygen; call a physician at once. SKIN: wash with soap and water. EYES: flush with water.</p> <p>3.4 TLV-TWA: Not listed.</p> <p>3.5 TLV-STEL: Not listed.</p> <p>3.6 TLV-Ceiling: 25 ppm</p> <p>3.7 Toxicity by Ingestion: Grade 2; LD₅₀ = 0.5 to 5g/kg (rat)</p> <p>3.8 Toxicity by Inhalation: Currently not available.</p> <p>3.9 Chronic Toxicity: Currently not available</p> <p>3.10 Vapor (Gas) Irritant Characteristics: Vapor is moderately irritating such that personnel will not usually tolerate moderate or high concentrations.</p> <p>3.11 Liquid or Solid Characteristics: Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.</p> <p>3.12 Odor Threshold: 0.05</p> <p>3.13 IDLH Value: 2,000 ppm</p> <p>3.14 OSHA PEL-TWA: 200 ppm</p> <p>3.15 OSHA PEL-STEL: Not listed.</p> <p>3.16 OSHA PEL-Ceiling: Not listed.</p> <p>3.17 EPA A EGL: Not listed</p>													

ACETALDEHYDE

AAD

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
-20	52.490	-100	0.297	28	1.317		N
-10	52.060	-80	0.300	30	1.314		O
0	51.630	-60	0.304	32	1.311		T
10	51.200	-40	0.308	34	1.307		
20	50.770	-20	0.311	36	1.304		P
30	50.340	0	0.315	38	1.301		E
40	49.910	20	0.319	40	1.297		R
50	49.480	40	0.322	42	1.294		T
60	49.050	60	0.326	44	1.291		I
				46	1.287		N
				48	1.284		O
				50	1.281		T
				52	1.277		
				54	1.274		P
				56	1.271		E
				58	1.267		R
				60	1.264		T
				62	1.261		I
				64	1.258		N
				66	1.254		O
				68	1.251		T

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
M	0	2.704	0	0.02414	0	0	0.269
I	5	3.111	5	0.02747	20	20	0.276
S	10	3.567	10	0.03117	40	40	0.283
C	15	4.080	15	0.03527	60	60	0.290
I	20	4.652	20	0.03980	80	80	0.298
B	25	5.291	25	0.04480	100	100	0.305
L	30	6.002	30	0.05029	120	120	0.312
E	35	6.790	35	0.05633	140	140	0.319
	40	7.664	40	0.06294	160	160	0.326
	45	8.629	45	0.07016	180	180	0.333
	50	9.693	50	0.07804	200	200	0.339
	55	10.860	55	0.08661	220	220	0.346
	60	12.150	60	0.09593	240	240	0.353
	65	13.560	65	0.10600	260	260	0.360
	70	15.100	70	0.11700	280	280	0.366
	75	16.780	75	0.12880	300	300	0.373
	80	18.610	80	0.14150	320	320	0.379
	85	20.610	85	0.15520	340	340	0.386
	90	22.770	90	0.17000	360	360	0.392
	95	25.120	95	0.18580	380	380	0.398
	100	27.660	100	0.20280	400	400	0.405
	105	30.400	105	0.22090	420	420	0.411
	110	33.360	110	0.24030	440	440	0.417
	115	36.560	115	0.26100			
	120	39.990	120	0.28310			
	125	43.680	125	0.30660			