

# ACETAL

AEL

## CAUTIONARY RESPONSE INFORMATION

<b>Common Synonyms</b> Acetaldehyde diethylacetal 1,1-Diethoxyethane Diethyl acetal Ethylidene diethylether USAF DO-45		Liquid	Colorless	Agreeable, nutty aftertaste
		Floats on water.		
Avoid contact with liquid or vapor. Keep people away. Wear self-contained breathing apparatus and full protective clothing. Shut off ignition sources. Call fire department. Stop discharge if possible. Isolate and remove discharged material. Notify local health and pollution control agencies. Protect water intakes.				
<b>Fire</b>	EXTREMELY FLAMMABLE May react with oxygen to form explosive peroxides. Flashback along vapor trail may occur. DO NOT USE WATER TO FIGHT FIRE. Extinguish with dry chemical, CO <sub>2</sub> , or alcohol foam. Wear self-contained breathing apparatus and full protective clothing.			
<b>Exposure</b>	CALL FOR MEDICAL AID.  VAPOR May be harmful if inhaled or absorbed through skin. Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.  LIQUID Harmful if ingested or absorbed through the skin. May cause irritation to eyes and skin. IF IN EYES: flush with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Flush affected areas with plenty of running water. IF SWALLOWED: do nothing except keep victim warm.			
<b>Water Pollution</b>	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.			

<b>1. CORRECTIVE RESPONSE ACTIONS</b> Stop discharge Contain Collection Systems: Skim	<b>2. CHEMICAL DESIGNATIONS</b> 2.1 CG Compatibility Group: Not listed 2.2 Formula: (C <sub>2</sub> H <sub>5</sub> O) <sub>2</sub> -CHCH <sub>3</sub> 2.3 IMO/UN Designation: 3.1/1088 2.4 DOT ID No.: 1088 2.5 CAS Registry No.: 105-57-7 2.6 NAERG Guide No.: 127 2.7 Standard Industrial Trade Classification: 51612
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### 3. HEALTH HAZARDS

- 3.1 **Personal Protective Equipment:** Approved respirator, chemical-resistant gloves, safety goggles, other protective clothing.
- 3.2 **Symptoms Following Exposure:** May irritate the upper respiratory tract. High concentrations act as a central nervous system depressant. Symptoms of exposure include headache, dizziness, drowsiness, abdominal pain, and nausea.
- 3.3 **Treatment of Exposure:** INGESTION: Call a physician. Keep victim warm. EYES: Flush with running water for at least 15 minutes. SKIN: Remove contaminated clothing and shoes. Flush affected areas with plenty of water. Wash with soap and water. INHALATION: Move victim to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen.
- 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<sub>50</sub> = 3.5 g/kg (mouse)
- 3.8 **Toxicity by Inhalation:** Currently not available.
- 3.9 **Chronic Toxicity:** Central nervous system depressant.
- 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 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:** -5°F C.C.
- 4.2 **Flammable Limits in Air:** 1.65 - 10.4 %
- 4.3 **Fire Extinguishing Agents:** CO<sub>2</sub>, dry chemical, alcohol foam
- 4.4 **Fire Extinguishing Agents Not to Be Used:** Do not use water
- 4.5 **Special Hazards of Combustion Products:** Explosive
- 4.6 **Behavior in Fire:** In fire, may decompose to form flammable or explosive mixtures in air. Old samples may explode upon heating.
- 4.7 **Auto Ignition Temperature:** 446°F
- 4.8 **Electrical Hazards:** Currently not available
- 4.9 **Burning Rate:** Currently not available
- 4.10 **Adiabatic Flame Temperature:** Currently not available
- 4.11 **Stoichiometric Air to Fuel Ratio:** Currently not available
- 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. 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:** 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:** Yes
- 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

### 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:** May polymerize on standing.
- 5.6 **Inhibitor of Polymerization:** Currently not available

### 9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 **Physical State at 15° C and 1 atm:** Liquid
- 9.2 **Molecular Weight:** 148.17
- 9.3 **Boiling Point at 1 atm:** 216°F = 102°C = 375°K
- 9.4 **Freezing Point:** -148°F = -100°C = 173°K
- 9.5 **Critical Temperature:** Currently not available
- 9.6 **Critical Pressure:** Currently not available
- 9.7 **Specific Gravity:** 0.831 at 20°C
- 9.8 **Liquid Surface Tension:** 21.65 dyne/cm = 0.022 N/m at 20°C
- 9.9 **Liquid Water Interfacial Tension:** Currently not available
- 9.10 **Vapor (Gas) Specific Gravity:** 4.1
- 9.11 **Ratio of Specific Heats of Vapor (Gas):** Currently not available
- 9.12 **Latent Heat of Vaporization:** 119.2 Btu/lb = 66.2 cal/g = 2.8 X 10<sup>5</sup> J/kg
- 9.13 **Heat of Combustion:** Currently not available
- 9.14 **Heat of Decomposition:** Currently not available
- 9.15 **Heat of Solution:** Currently not available
- 9.16 **Heat of Polymerization:** Currently not available
- 9.17 **Heat of Fusion:** Currently not available
- 9.18 **Limiting Value:** Currently not available
- 9.19 **Reid Vapor Pressure:** 1.1 psia

### 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:** Not listed

### 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	51.900		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E		C U R R E N T L Y  N O T  A V A I L A B L E

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
77	6.000	0 20 40 60 80 100 120 140 160 180 200	0.055 0.095 0.164 0.285 0.494 0.857 1.487 2.579 4.471 7.754 13.446		C U R R E N T L Y  N O T  A V A I L A B L E	0 25 50 75 100 125 150 175 200 225 250 275 300 325 350 375 400 425 450 475 500 525 550 575 600	0.317 0.328 0.338 0.349 0.359 0.370 0.380 0.391 0.401 0.412 0.422 0.433 0.443 0.454 0.464 0.475 0.485 0.496 0.506 0.516 0.527 0.537 0.548 0.558 0.569