

AMMONIUM CARBAMATE

ACM

CAUTIONARY RESPONSE INFORMATION

Common Synonyms Ammonium aminoformate Anhydride of ammonium carbonate Carbamic acid, ammonium salt	Solid crystalline powder Mixes with water.	White Ammonia odor
<p>Wear goggles, self-contained breathing apparatus, and rubber gloves. Keep people away. Stop discharge if possible. Call fire department. Isolate and remove discharged material. Notify local health and pollution control agencies. Protect water intakes.</p>		
Fire	COMBUSTIBLE. POISONOUS GAS MAY BE PRODUCED IN FIRE OR WHEN HEATED. Wear self-contained breathing apparatus, goggles, rubber gloves, and normal protective gear. Extinguish with CO ₂ dry chemical, or water spray.	
Exposure	CALL FOR MEDICAL AID. Irritating to eyes, nose, and throat. Harmful if swallowed. Move to fresh air. 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	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.	

1. CORRECTIVE RESPONSE ACTIONS

Dilute and disperse
Stop discharge

2. CHEMICAL DESIGNATIONS

- 2.1 CG Compatibility Group: Not listed
- 2.2 Formula: NH₄COONH₄
- 2.3 IMO/UN Designation: Not listed
- 2.4 DOT ID No.: Not listed
- 2.5 CAS Registry No.: 1111-78-0
- 2.6 NAERG Guide No.: 154
- 2.7 Standard Industrial Trade Classification: 51471

3. HEALTH HAZARDS

- 3.1 Personal Protective Equipment: Self-contained breathing apparatus, rubber gloves, safety glasses, normal protective gear.
- 3.2 Symptoms Following Exposure: INHALATION: Irritating to mucous membranes of respiratory tract. EYES: Irritating.
- 3.3 Treatment of Exposure: Call a physician. INHALATION: Remove to fresh air.
- 3.4 TLV-TWA: 25 ppm as NH₃. Material decomposes in air releasing ammonia. Contains 44% NH₃.
- 3.5 TLV-STEL: Not listed.
- 3.6 TLV-Ceiling: 35 ppm as NH₃.
- 3.7 Toxicity by Ingestion: LD50=1400 mg/kg (rat).
- 3.8 Toxicity by Inhalation: Currently not available.
- 3.9 Chronic Toxicity: Carbamates are suspected carcinogens of lungs and hematopoietic organs.
- 3.10 Vapor (Gas) Irritant Characteristics: Vapors are moderately irritating such that personnel will not usually tolerate moderate or high concentrations.
- 3.11 Liquid or Solid Characteristics: Currently not available
- 3.12 Odor Threshold: <5 ppm as NH₃ (detection); 46.8 ppm as NH₃ (recognition).
- 3.13IDLH Value: 300 ppm as NH₃.
- 3.14 OSHA PEL-TWA: 50 ppm as NH₃.
- 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: Not flammable
- 4.2 Flammable Limits in Air: Currently not available
- 4.3 Fire Extinguishing Agents: Carbon dioxide, dry chemical, or water spray
- 4.4 Fire Extinguishing Agents Not to Be Used: Currently not available
- 4.5 Special Hazards of Combustion Products: Currently not available
- 4.6 Behavior in Fire: Moderate fire and explosion hazards when exposed to heat or flame
- 4.7 Auto Ignition Temperature: Not pertinent
- 4.8 Electrical Hazards: Not pertinent
- 4.9 Burning Rate: Not pertinent
- 4.10 Adiabatic Flame Temperature: Not pertinent
- 4.11 Stoichiometric Air to Fuel Ratio: Not pertinent
- 4.12 Flame Temperature: Not pertinent
- 4.13 Combustion Molar Ratio (Reactant to Product): Currently not available
- 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: None
- 5.3 Stability During Transport: Unstable - decomposes in air, changing to ammonium carbonate. Volatilizes at 60°C.
- 5.4 Neutralizing Agents for Acids and Caustics: None
- 5.5 Polymerization: Does not polymerize.
- 5.6 Inhibitor of Polymerization: Not pertinent

6. WATER POLLUTION

- 6.1 Aquatic Toxicity: Decomposes to (NH₄)₂CO₃ and NH₃. 5.5 to 7.0 mg/l (NH₄)₂CO₃ - lethal to fish. Toxicity threshold for freshwater fish appears to be between 30 to 40 ppm (NH₄)₂CO₃.
- 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: Not listed

7. SHIPPING INFORMATION

- 7.1 Grades of Purity: Currently not available
- 7.2 Storage Temperature: Cool
- 7.3 Inert Atmosphere: Currently not available
- 7.4 Venting: Currently not available
- 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: 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).....	0
Instability (Yellow).....	0

- 8.6 EPA Reportable Quantity: 5000
- 8.7 EPA Pollution Category: D
- 8.8 RCRA Waste Number: Not listed
- 8.9 EPA FWCNA List: Yes

9. PHYSICAL & CHEMICAL PROPERTIES

- 9.1 Physical State at 15° C and 1 atm: Solid
- 9.2 Molecular Weight: 78.07
- 9.3 Boiling Point at 1 atm: Sublimes 140°F = 60°C = 333.2°K
- 9.4 Freezing Point: Not pertinent
- 9.5 Critical Temperature: Not pertinent
- 9.6 Critical Pressure: Not pertinent
- 9.7 Specific Gravity: Currently not available
- 9.8 Liquid Surface Tension: Not pertinent
- 9.9 Liquid Water Interfacial Tension: Not pertinent
- 9.10 Vapor (Gas) Specific Gravity: Not pertinent
- 9.11 Ratio of Specific Heats of Vapor (Gas): Not pertinent
- 9.12 Latent Heat of Vaporization: Not pertinent
- 9.13 Heat of Combustion: (Est.) at 25°C –2612 Btu/lb = –1451 cal/g = –60.7 X 10³ J/kg
- 9.14 Heat of Decomposition: Currently not available
- 9.15 Heat of Solution: (Endothermic) 86.9 Btu/lb = 48.3 cal/g = 2.02 X 10³ J/kg
- 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		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
NOT PERTINENT			NOT PERTINENT		NOT PERTINENT		NOT PERTINENT

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
SOLUBLE			NOT PERTINENT		CURRENTLY NOT AVAILABLE		NOT PERTINENT