

ACETONITRILE

ATN

| CAUTIONARY RESPONSE INFORMATION | | | |
|--|---|-----------|------------|
| Common Synonyms | Watery liquid | Colorless | Sweet odor |
| Cyanomethane Ethanenitrile Ethyl nitrile Methyl cyanide | | | |
| Floats and mixes with water. Flammable, irritating vapor is produced. | | | |
| Restrict access. 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. Avoid contact with liquid and vapor. Notify local health and pollution control agencies. Protect water intakes. | | | |
| Fire | FLAMMABLE POISONOUS GASES MAY BE PRODUCED WHEN HEATED. Flashback along vapor trail may occur. Vapor may explode if ignited in an enclosed area. Wear goggles and self-contained breathing apparatus. Extinguish with dry chemical, 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 difficult breathing. Move to fresh air. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. LIQUID Irritating to 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. | | |
| Water Pollution | Dangerous to aquatic life in high 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 | 2. CHEMICAL DESIGNATIONS |
|--|--|
| Dilute and disperse Stop discharge | 2.1 CG Compatibility Group: 37; Nitriles 2.2 Formula: <chem>C#CN</chem> 2.3 IMO/UN Designation: 3/1648 2.4 DOT ID No.: 1648 2.5 CAS Registry No.: 75-05-8 2.6 NAERG Guide No.: 131 2.7 Standard Industrial Trade Classification: 51484 |
| 3. HEALTH HAZARDS | |
| 3.1 Personal Protective Equipment: Wear self-contained breathing apparatus | |
| 3.2 Symptoms Following Exposure: Exposure to 160 ppm for 4 hours causes flushing of the face and a feeling of constriction in the chest; 500 ppm for brief periods is irritating to the nose and throat. Severe exposures cause irritability, skin eruptions, confusion, delirium, convulsions, paralysis, and death due to central nervous system depression. | |
| 3.3 Treatment of Exposure: Remove victim from contaminated atmosphere. Give artificial respiration and oxygen if respiration is impaired. | |
| 3.4 TLV-TWA: 40 ppm | |
| 3.5 TLV-STEL: Not listed. | |
| 3.6 TLV-Ceiling: 60 ppm | |
| 3.7 Toxicity by Ingestion: Grade 3; LD ₅₀ = 50-500 mg/kg (guinea pig) | |
| 3.8 Toxicity by Inhalation: Currently not available. | |
| 3.9 Chronic Toxicity: Not pertinent | |
| 3.10 Vapor (Gas) Irritant Characteristics: Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. 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 the skin. | |
| 3.12 Odor Threshold: 40 ppm | |
| 3.13IDLH Value: 500 ppm | |
| 3.14 OSHA PEL-TWA: 40 ppm | |
| 3.15 OSHA PEL-STEL: Not listed. | |
| 3.16 OSHA PEL-Ceiling: Not listed. | |
| 3.17 EPA A EGL: Not listed | |

| 4. FIRE HAZARDS | 7. SHIPPING INFORMATION |
|---|--|
| 4.1 Flash Point: 42°F O.C. | 7.1 Grades of Purity: Currently not available |
| 4.2 Flammable Limits in Air: 4.4%-16% | 7.2 Storage Temperature: Ambient |
| 4.3 Fire Extinguishing Agents: Alcohol foam, dry chemical, carbon dioxide | 7.3 Inert Atmosphere: No requirement |
| 4.4 Fire Extinguishing Agents Not to Be Used: Water may be ineffective | 7.4 Venting: Pressure-vacuum |
| 4.5 Special Hazards of Combustion Products: Toxic vapors are generated when heated | 7.5 IMO Pollution Category: III |
| 4.6 Behavior in Fire: Vapor heavier than air and may travel a considerable distance to a source of ignition and flash back. | 7.6 Ship Type: 3 |
| 4.7 Auto Ignition Temperature: 975°F | 7.7 Barge Hull Type: 3 |
| 4.8 Electrical Hazards: Not pertinent | |
| 4.9 Burning Rate: 2.7 mm/min. | |
| 4.10 Adiabatic Flame Temperature: Currently not available | |
| 4.11 Stoichiometric Air to Fuel Ratio: 17.9 (calc.) | |
| 4.12 Flame Temperature: Currently not available | |
| 4.13 Combustion Molar Ratio (Reactant to Product): 4.5 (calc.) | |
| 4.14 Minimum Oxygen Concentration for Combustion (MOCC): Not listed | |
| 5. CHEMICAL REACTIVITY | 8. HAZARD CLASSIFICATIONS |
| 5.1 Reactivity with Water: No reaction | 8.1 49 CFR Category: Flammable liquid |
| 5.2 Reactivity with Common Materials: No reaction | 8.2 49 CFR Class: 3 |
| 5.3 Stability During Transport: Stable | 8.3 49 CFR Package Group: II |
| 5.4 Neutralizing Agents for Acids and Caustics: Not pertinent | 8.4 Marine Pollutant: No |
| 5.5 Polymerization: Not pertinent | 8.5 NFPA Hazard Classification: |
| 5.6 Inhibitor of Polymerization: Not pertinent | Category Classification Health Hazard (Blue)..... 2 Flammability (Red)..... 3 Instability (Yellow)..... 1 |
| 8.6 EPA Reportable Quantity: 5000 pounds | |
| 8.7 EPA Pollution Category: D | |
| 8.8 RCRA Waste Number: U003 | |
| 8.9 EPA FWCRA List: Not listed | |
| 9. PHYSICAL & CHEMICAL PROPERTIES | |
| 9.1 Physical State at 15° C and 1 atm: Liquid | |
| 9.2 Molecular Weight: 41.05 | |
| 9.3 Boiling Point at 1 atm: 179°F = 81.6°C = 354.8°K | |
| 9.4 Freezing Point: -50.3°F = -45.7°C = 227.5°K | |
| 9.5 Critical Temperature: 526.5°F = 274.7°C = 547.9°K | |
| 9.6 Critical Pressure: 701 pisa = 47.7 atm = 4.83 MN/m ² | |
| 9.7 Specific Gravity: 0.787 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: 1.4 | |
| 9.11 Ratio of Specific Heats of Vapor (Gas): 1.192 | |
| 9.12 Latent Heat of Vaporization: 313 Btu/lb = 174 cal/g = 7.29 X 10 ⁵ J/kg | |
| 9.13 Heat of Combustion: -13,360 Btu/lb = -7420 cal/g = -310.7 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: 0.02 psia | |

NOTES

ACETONITRILE

ATN

| 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 |
| -40 | 52.920 | 52 | 0.540 | | N | | N |
| -30 | 52.540 | 54 | 0.540 | | O | | O |
| -20 | 52.160 | 56 | 0.540 | | T | | T |
| -10 | 51.790 | 58 | 0.540 | | P | | P |
| 0 | 51.410 | 60 | 0.540 | | E | | E |
| 10 | 51.030 | 62 | 0.540 | | R | | R |
| 20 | 50.650 | 64 | 0.540 | | I | | I |
| 30 | 50.260 | 66 | 0.540 | | N | | N |
| 40 | 49.880 | 68 | 0.540 | | E | | E |
| 50 | 49.500 | 70 | 0.540 | | N | | N |
| 60 | 49.120 | 72 | 0.540 | | E | | E |
| 70 | 48.730 | 74 | 0.540 | | N | | N |
| 80 | 48.350 | 76 | 0.540 | | E | | E |
| 90 | 47.970 | 78 | 0.540 | | T | | T |
| 100 | 47.580 | 80 | 0.540 | | P | | P |
| 110 | 47.200 | 82 | 0.540 | | E | | E |
| 120 | 46.810 | 84 | 0.540 | | R | | R |
| 130 | 46.420 | 86 | 0.540 | | I | | I |
| 140 | 46.040 | | | | N | | N |
| 150 | 45.650 | | | | E | | E |
| 160 | 45.260 | | | | N | | N |
| 170 | 44.870 | | | | E | | 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 |
| M | 10 | 0.209 | 10 | 0.00170 | 0 | 0.280 | |
| I | 20 | 0.298 | 20 | 0.00237 | 25 | 0.287 | |
| S | 30 | 0.417 | 30 | 0.00326 | 50 | 0.295 | |
| C | 40 | 0.575 | 40 | 0.00440 | 75 | 0.303 | |
| I | 50 | 0.781 | 50 | 0.00586 | 100 | 0.310 | |
| B | 60 | 1.046 | 60 | 0.00770 | 125 | 0.317 | |
| L | 70 | 1.383 | 70 | 0.00998 | 150 | 0.324 | |
| E | 80 | 1.805 | 80 | 0.01279 | 175 | 0.332 | |
| | 90 | 2.329 | 90 | 0.01620 | 200 | 0.338 | |
| | 100 | 2.972 | 100 | 0.02031 | 225 | 0.345 | |
| | 110 | 3.755 | 110 | 0.02521 | 250 | 0.352 | |
| | 120 | 4.699 | 120 | 0.03100 | 275 | 0.359 | |
| | 130 | 5.829 | 130 | 0.03780 | 300 | 0.365 | |
| | 140 | 7.169 | 140 | 0.04572 | 325 | 0.372 | |
| | 150 | 8.747 | 150 | 0.05487 | 350 | 0.378 | |
| | 160 | 10.590 | 160 | 0.06538 | 375 | 0.384 | |
| | 170 | 12.740 | 170 | 0.07737 | 400 | 0.390 | |
| | 180 | 15.220 | 180 | 0.09097 | 425 | 0.396 | |
| | 190 | 18.060 | 190 | 0.10630 | 450 | 0.402 | |
| | 200 | 21.310 | 200 | 0.12350 | 475 | 0.408 | |
| | 210 | 25.000 | 210 | 0.14280 | 500 | 0.414 | |
| | 220 | 29.170 | 220 | 0.16410 | 525 | 0.419 | |
| | 230 | 33.870 | 230 | 0.18780 | 550 | 0.425 | |
| | | | | | 575 | 0.430 | |
| | | | | | 600 | 0.435 | |