

# Acrylonitrile MSDS

**Disclaimer:** This Material Safety Data Sheet (MSDS) is intended for use by trained professionals and provides guidance for the safe handling of this product. The user is solely responsible for determining the suitability of this information for their specific application and for ensuring compliance with all applicable laws and regulations.

## 1. Product Name and Identification

- **Product Name:** [Acrylonitrile](#)
- **CAS Number:** 107-13-1
- **Synonyms:** ACN, Vinyl Cyanide, Propenenitrile, Cyanoethylene
- **Chemical Formula:** C<sub>3</sub>H<sub>3</sub>N

## 2. Composition/Ingredients

- **Chemical Name:** Acrylonitrile
- **Concentration:** Typically supplied at ≥99% purity. The product is stabilized and contains a polymerization inhibitor.
- **Hazardous Component:** Yes

## 3. Hazards Identification

- **Physical Hazards:** Highly flammable liquid and vapor. Vapors are heavier than air and may travel a considerable distance to an ignition source and flash back. May polymerize explosively when exposed to heat, light, or certain chemicals.
- **Health Hazards:** Toxic if swallowed, in contact with skin, or if inhaled. Causes serious eye irritation and skin irritation. Suspected of causing genetic defects. May cause cancer. Can be absorbed through the skin in toxic amounts. May form cyanide in the body, leading to systemic poisoning.
- **Environmental Hazards:** Toxic to aquatic life. Releases into the environment should be strictly avoided.

## 4. First Aid Measures

- **Inhalation:** Immediately relocate the exposed individual to fresh air. Keep the person calm and at rest. If breathing is difficult, administer oxygen. If breathing has stopped, provide artificial respiration (use a barrier device to avoid self-exposure). Seek immediate medical attention.
- **Skin Contact:** Immediately remove all contaminated clothing and shoes. Flush the affected skin with large amounts of water for at least 15-20 minutes. Seek immediate medical attention.
- **Eye Contact:** Immediately rinse eyes with a continuous stream of water for at least 20 minutes, holding the eyelids open to ensure thorough flushing. Remove contact

lenses if present and easy to do. Continue rinsing. Seek immediate medical attention, preferably from an ophthalmologist.

- **Ingestion:** Do NOT induce vomiting. If the person is conscious and alert, rinse their mouth with water. Never give anything by mouth to an unconscious or convulsing person. Seek immediate medical attention.

## 5. Handling and Storage

- **Handling:** Use only in a closed system or under a chemical fume hood with adequate ventilation. Keep away from heat, sparks, open flames, and hot surfaces. Ground/bond container and receiving equipment. Use non-sparking tools. Avoid all contact with skin, eyes, and clothing. Do not breathe vapors or mists. Wear appropriate personal protective equipment (PPE).
- **Storage:** Store in a cool, dry, well-ventilated, and secured area designated for flammable and toxic materials. Keep container tightly closed. Protect from physical damage, direct sunlight, and heat. The product requires an inhibitor; store under an air (oxygen) headspace to maintain inhibitor effectiveness. Store separately from incompatible materials.

## 6. Exposure Controls/Personal Protection

- **Exposure Limits:** Adhere to all established federal, state, and local occupational exposure limits (OELs). This substance is highly regulated.
- **Engineering Controls:** A closed-system operation with local exhaust ventilation is required. Ensure that safety showers and eyewash stations are immediately accessible in the work area.
- **Personal Protective Equipment (PPE):**
  - **Eye/Face Protection:** Wear chemical safety goggles and a full-face shield.
  - **Skin Protection:** Wear appropriate chemically resistant gloves (e.g., butyl rubber, laminate film) and impervious protective clothing, including boots and an apron, to prevent any possibility of skin contact.
  - **Respiratory Protection:** When engineering controls are not sufficient, a NIOSH-approved supplied-air respirator or a full-facepiece respirator with appropriate organic vapor/acid gas cartridges is required.

## 7. Physical and Chemical Properties

- **Appearance:** Clear, colorless to pale yellow liquid
- **Odor:** Pungent, onion- or garlic-like
- **Boiling Point:** 77°C (171°F)
- **Melting Point:** -83.5°C (-118.3°F)
- **Flash Point:** -5°C (23°F) (Closed Cup)
- **Solubility:** Moderately soluble in water (7.3 g/100 mL @ 20°C).
- **Specific Gravity:** 0.81 @ 20°C (68°F)

- **Vapor Density:** 1.83 (Air = 1)

## 8. Stability and Reactivity

- **Stability:** Stable under recommended storage conditions with an inhibitor. Uninhibited or depleted inhibitor material can polymerize violently upon exposure to heat, light, or contaminants.
- **Reactivity:** May undergo hazardous polymerization. Reacts violently with strong acids, strong bases, strong oxidizing agents, and certain amines.
- **Conditions to Avoid:** Exposure to heat, flames, sparks, static discharge, sunlight, and UV radiation. Loss of inhibitor. Contact with incompatible materials.
- **Incompatible Materials:** Strong oxidizing agents (e.g., peroxides), strong acids (e.g., sulfuric acid), strong bases (e.g., sodium hydroxide), copper, brass, and ammonia.
- **Hazardous Decomposition Products:** Combustion or thermal decomposition produces toxic gases, including hydrogen cyanide, carbon oxides (CO, CO<sub>2</sub>), and nitrogen oxides (NO<sub>x</sub>).

## 9. Toxicological Information

- **Acute Effects:**
  - **Oral:** Toxic if swallowed. Symptoms may mimic cyanide poisoning, including headache, nausea, dizziness, confusion, and convulsions.
  - **Dermal:** Toxic in contact with skin. It is readily absorbed through the skin, causing local irritation and systemic poisoning.
  - **Inhalation:** Toxic if inhaled. Vapors can cause severe irritation to the respiratory tract. High exposure can lead to rapid onset of systemic toxicity.
  - **Eyes:** Causes serious irritation, redness, pain, and potential for lasting damage.
- **Chronic Effects:** Potential human carcinogen (classified by IARC and NTP). Suspected of causing genetic defects. Prolonged exposure can affect the central nervous system, liver, and kidneys.

## 10. Disposal Considerations

- **Disposal Method:** This material and its container are hazardous waste. Disposal must be handled in strict accordance with all applicable federal, state, and local regulations. Do not allow this product to enter the sewer system or any water source. Disposal should be carried out by a licensed and qualified hazardous waste management contractor.
- **Contaminated Packaging:** Empty containers retain product residue (liquid and vapor) and can be dangerous. Do not pressurize, cut, weld, or expose such containers to heat or sources of ignition. They must be handled as hazardous waste.