

Common Name: HYDROGEN CYANIDE

Synonyms: Formonitrile; Hydrocyanic Acid; Prussic Acid

CAS No: 74-90-8

Molecular Formula: HCN

RTK Substance No: 1013

Description: Colorless to pale blue liquid below 78°F (26°C), and a colorless gas at higher temperatures, with a distinct bitter almond or stinky sneaker odor

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
<p>4 - Health</p> <p>4 - Fire</p> <p>1 - Reactivity</p> <p>DOT#: UN 1051 (Anhydrous; Stabilized)</p> <p>ERG Guide #: 117</p> <p>Hazard Class: 6.1 (Poison)</p>	<p>FLAMMABLE LIQUID and GAS.</p> <p>Stop flow of gas or allow to burn. DO NOT attempt to extinguish fire unless flow can be stopped. Shut off supply or let burn.</p> <p>Use dry chemical, CO₂, water spray, alcohol-resistant foam or other foam as extinguishing agents.</p> <p>POISONOUS GASES ARE PRODUCED IN FIRE, including <i>Nitrogen Oxides</i>.</p> <p>CONTAINERS MAY EXPLODE IN FIRE.</p> <p>Use water spray to keep fire-exposed containers cool and to suppress vapors.</p> <p>Vapors may travel to a source of ignition and flash back.</p> <p>Hydrogen Cyanide may form an ignitable vapor/air mixture in closed tanks or containers.</p>	<p><i>Anhydrous and Unstabilized Hydrogen Cyanide</i> are severe explosion hazards and can polymerize violently, resulting in fires and explosions.</p> <p>Hydrogen Cyanide can polymerize explosively when exposed to ELEVATED TEMPERATURES (over 122°F or 50°C) and STRONG BASES (such as SODIUM HYDROXIDE, CALCIUM HYDROXIDE, AMMONIA, AMINES and SODIUM CARBONATE).</p> <p>Hydrogen Cyanide reacts violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) and STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC).</p> <p>Hydrogen Cyanide solutions containing more than 4 to 5% water are less stable than the anhydrous (dry) form and can self react and/or form explosive mixtures in air.</p>

SPILL/LEAKS

Isolation Distance:

Spill (small): 60 meters (200 feet)

Spill (large): 400 meters (1,250 feet)

Fire: 800 meters (1/2 mile)

Stop flow of gas. If source of leak is a cylinder and the leak cannot be stopped in place, remove the leaking cylinder to a safe place in the open air, and repair leak or allow cylinder to empty.

Absorb liquids in dry sand, earth, or a similar material and place into sealed containers for disposal.

Use foam to suppress vapors.

DO NOT wash into sewer.

Bond and ground all containers when transferring **Hydrogen Cyanide** and use only non-sparking tools and equipment.

Hydrogen Cyanide is very toxic to aquatic organisms.

PHYSICAL PROPERTIES

Odor Threshold:	2 to 10 ppm
Flash Point:	0°F (-18°C)
LEL:	5.6%
UEL:	40%
Auto Ignition Temp:	1,000°F (538°C)
Vapor Density:	0.94 (gas) (air = 1)
Vapor Pressure:	630 mm Hg at 68°F (20°C)
Specific Gravity:	0.7 (water = 1)
Water Solubility:	Soluble
Boiling Point:	78°F (26°C)
Melting Point:	7°F (-13.3°C)
Ionization Potential:	13.6 eV
Molecular Weight:	27

EXPOSURE LIMITS

OSHA: 10 ppm, 8-hr TWA

NIOSH: 4.7 ppm, Ceiling

ACGIH: 4.7 ppm, Ceiling

IDLH: 50 ppm

The Protective Action Criteria values are:

PAC-1 = 2 ppm PAC-2 = 7.1ppm PAC-3 = 15 ppm

PROTECTIVE EQUIPMENT

Gloves:	Nitrile and Neoprene (>8-hr breakthrough for <i>liquid Hydrogen Cyanide</i>)
Coveralls:	Tychem® TK (>8-hr breakthrough for <i>gaseous and liquid Hydrogen Cyanide</i>)
Respirator:	SCBA

HEALTH EFFECTS

Eyes:	Irritation and burns
Skin:	Irritation and burns (skin absorbable)
Inhalation:	Flushing of the face, chest tightness, headache, nausea and vomiting, weakness and shortness of breath

FIRST AID AND DECONTAMINATION

Remove the person from exposure.

Flush eyes with large amounts of water for at least 15 minutes. Remove contact lenses, if worn, while rinsing.

Quickly remove contaminated clothing and wash contaminated skin with large amounts of soap and water. Seek medical attention.

Begin artificial respiration if breathing has stopped and CPR if necessary.

Transfer to a medical facility.

Use *Amyl Nitrite* capsules if symptoms develop.