


Application Note

Hydrogen Cyanide

Potential industries and applications for gas detection products

- Chemical manufacture
- Grain stores
- Metal processing factories

Hydrogen Cyanide is a chemical compound with chemical formula HCN. A solution of Hydrogen Cyanide in water is called Hydrocyanic Acid. Hydrogen Cyanide is a colourless, very poisonous, and highly volatile liquid that boils slightly above room temperature at 26°C (78.8°F). HCN has a faint, bitter, almond-like odour that some people are unable to detect due to a genetic trait. Hydrogen Cyanide is weakly acidic and partly ionises in solution to give the Cyanide Anion, CN⁻. The salts of Hydrogen Cyanide are known as Cyanides. HCN is a highly valuable precursor to many chemical compounds ranging from polymers to pharmaceuticals.

Hydrogen Cyanide			
$H-C\equiv N$ 			
General			
Systematic Name	Hydrogen Cyanide		
Other Names	Hydrocyanic Acid Prussic Acid Formonitrile Formic Anammonide Carbon Hydride Nitride Cyclon		
Molecular Formula	HCN		
Appearance	Colourless gas or pale blue highly volatile liquid		
CAS Number	74-90-8		
Properties			
Vapour Density	0.94		
Melting Point	-13.4°C (259.75K, 7.88°F)		
Boiling Point	26°C (299.15 K, 78.8°F)		
Toxic Exposure Levels			
EH 40 Workplace Exposure Limit (WEL)			
Long-term exposure limit (8-hour TWA reference period)		Short-term exposure limit (15-minute TWA reference period)	
ppm	mg.m⁻³	ppm	mg.m⁻³
-	-	10	11
OSHA Permissible Exposure Limit (PEL)			
Long-term exposure limit (8-hour TWA reference period)			
ppm	mg.m⁻³		
10	11		
ACGIH Threshold Limit Value			
8-hour TWA workday and a 40-hour workweek		4.7ppm (ceiling)	

Industrial Applications

Hydrogen Cyanide is an important chemical with over a million tons produced globally each year. Hydrogen Cyanide is manufactured industrially by reacting Methane and Ammonia in air at high temperatures over a platinum catalyst. The resultant product is then used to make a wide range of chemicals for use in paints, plastics and synthetic fibres such as nylon.

Sodium and Potassium Cyanide and other Cyanide salts may be made from Hydrogen Cyanide and these are widely used in metal processing including electroplating and hardening. Large amounts of Sodium Cyanide are used around the World in the extraction of gold and silver from ores.

Hydrogen Cyanide and other Cyanide compounds have also been used as a fumigant to control pests in grain stores.

Hydrogen Cyanide is produced and found throughout the environment at low levels from combustion of organic matter, volcanoes and from the natural processes of some plants, bacteria, algae and fungi.

Honeywell Analytics' product offering



Our Product Range



Fixed Gas Monitoring

Honeywell Analytics offers a wide range of fixed gas detection solutions for a diverse array of industries and applications including: Commercial properties, industrial applications, semiconductor manufacturers, energy plants and petrochemical sites.

- » Detection of flammable, oxygen and toxic gases (including exotics)
- » Innovative use of 4 core sensing technologies – paper tape, electrochemical cell, catalytic bead and infrared
- » Capability to detect down to Parts Per Billion (ppb) or Percent by Volume (%v/v)
- » Cost effective regulatory compliance solutions

Portable Gas Monitoring

When it comes to personal protection from gas hazards, Honeywell Analytics has a wide range of reliable solutions ideally suited for use in confined or enclosed spaces.

These include:

- » Detection of flammable, oxygen and toxic gases
- » Single gas personal monitors – worn by the individual
- » Multi-gas portable gas monitors – used for confined space entry and regulatory compliance
- » Multi-gas transportable monitors – used for temporary protection of area during site construction and maintenance activities

Technical Services

At Honeywell Analytics, we believe in the value of great service and customer care. Our key commitment is providing complete and total customer satisfaction. Here are just a few of the services we can offer:

- » Full technical support
- » Expert team on hand to answer questions and queries
- » Fully equipped workshops to ensure quick turnaround on repairs
- » Comprehensive service engineer network
- » Training on product use and maintenance
- » Mobile calibration service
- » Customised programmes of preventative/corrective maintenance
- » Extended warranties on products

Find out more

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