

Application Note

Hydrogen Sulphide

Potential industries and applications for gas detection products

- Drilling rigs and platforms
- Production platforms
- Refineries
- Gas storage and distribution
- Chemical plants
- Wastewater treatment
- Landfill gas
- Nuclear industry (heavy water)
- Engine test facilities
- Confined space entry
- Utilities

Hydrogen Sulphide is the chemical compound with the formula H_2S . This colourless, toxic and flammable gas is responsible for the foul odour of rotten eggs and flatulence. It often results from the bacterial break down of organic matter in the absence of Oxygen, such as in swamps, landfill sites and sewers (anaerobic digestion).

It also occurs in volcanic gases, natural gas and some well waters. The odour of H_2S is commonly misattributed to elemental Sulphur, which is in fact odourless.

Hydrogen Sulphide has numerous names, some of which are archaic (see Table).

Hydrogen Sulphide is a highly toxic and flammable gas. Being heavier than air, it tends to accumulate at the bottom of poorly ventilated spaces. Although very pungent at first, it quickly deadens the sense of smell, so potential victims may be unaware of its presence until it is too late.

Hydrogen Sulphide is corrosive and renders some steels brittle, leading to Sulphide stress cracking — a concern especially for handling sour gas and sour crude oil in the oil industry. Generally small amounts of Hydrogen Sulphide (>1%) occur in crude petroleum but natural gas can contain up to 28%.

Industrial Applications

In the nuclear industry, Hydrogen Sulphide is also used in the separation of Deuterium Oxide, i.e. heavy water, from normal water via the Girdler Sulphide process.

For spark ignition engines, the most commonly used catalytic converter is the three-way converter. Unwanted reactions, such as the formation of Hydrogen Sulphide can occur in the three-way catalyst.

Hydrogen Sulphide			
General			
Systematic Name	Hydrogen Sulphide, Sulphane		
Other Names	Sulphuretted Hydrogen Sulphane Sulphur Hydride Sour Gas Sulphurated Hydrogen Hydrosulphuric Acid Sewer Gas Stink Damp		
Molecular Formula	H_2S		
Appearance	Colourless gas		
CAS Number	7783-06-4		
Properties			
Vapour Density	1.19		
Melting Point	-82.30°C (190.85K)		
Boiling Point	-60.28°C (212.87K)		
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
5	7	10	14
OSHA Permissible Exposure Limit (PEL)			
Long-term exposure limit (8-hour TWA reference period)			
ppm	mg.m⁻³		
20 (ceiling)	-		
ACGIH Threshold Limit Value			
8-hour TWA workday and a 40-hour workweek		10ppm	

Honeywell 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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