



HYDROGEN SULPHIDE SCRUBBERS

The anaerobic digestion of organic matter produces methane and carbon dioxide. It can also lead to the production of other trace gases, such as hydrogen sulphide. Hydrogen sulphide can be a health and safety hazard. The gas has an unpleasant odour and can cause the rapid corrosion of carbon steels.

Hydrogen sulphide can be removed from gas streams by means of chemical oxidative scrubbing. Such scrubbers employ water based reagents containing oxidants such as sodium hydroxide, sodium hypochlorite, potassium hydroxide and ethanolamines. Each chemical oxidant has its advantages and disadvantages for specific applications.



KEY FEATURES

Remove noxious odours

Prevent corrosion in plant and equipment that can be brought about by hydrogen sulphide

Prevent emissions of sulphur dioxide

Remove health hazards that can result from high concentrations of hydrogen sulphide

Organics gas scrubbers meet all environmental standards for removing hydrogen sulphide.

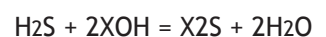
SOME BASIC FACTS

Atomic weight 34.08
Melting point -85.5°C
Boiling point -60.3°C

Toxicological Summary:

Inhalation represents by far the most significant route of entry for hydrogen sulphide. Exposure to levels of hydrogen sulphide above 500 ppm even for short periods will generally result in rapid or immediate respiratory failure or collapse. Death will result unless the victim is rescued immediately and given pulmonary resuscitation. Exposure to levels below 500 ppm may result in serious consequences including unconsciousness and death

Reaction equation:



SPECIFICATION DATA

Flow rate in this standard range:
100 to 20,000 normal cubic metres per hour

Pressure drop across scrubber:
Typical = 25 mbar gauge

Removal efficiency:
Typical = 98%, subject to design specification

Design standard:
"Good engineering practice" for low pressure systems
ASME UL approvals available
BS5500 approvals available
Lloyd's certification available

Flow control:
Flow rate is controlled by either a manual or a solenoid-actuated chemical duty butterfly valve. All valves are chosen to suit the chemical duty.

Materials:
To suit application. Materials include stainless steels, high quality alloys and plastics.

Control options:
Manual
Automated
Gas concentration alarms
Feed-back loop
SCADA

Available oxidants:
Sodium hydroxide
Sodium hypochlorite
Potassium hydroxide
Monoethanolamine with on site regeneration

For further information please visit our web site or contact our Technical Sales Manager, Mr Terry Scott.

There are several principal options for removing hydrogen sulphide from gas streams. These range from simple water-scrubbing to liquid oxidant scrubbers, reduction reactors, the use of activated carbon adsorbers, and ferric or zinc oxide beds.

Each method has its own distinct advantages and disadvantages. Each has proven to be the optimum solution for specific process situations. Organics can assess the governing parameters of specific situations and provide the best technical/ commercial solution on a case-by-case basis.

With regard to biogas, the preferred options are based upon the use of sodium hydroxide (caustic soda) solutions, sodium hypochlorite solutions or liquid amines.

The former two options have the advantage of simplicity and lower capital cost; the latter is selected when operational simplicity is required.

Potassium hydroxide may be considered when hydrogen sulphide concentrations or loadings are high.

A sodium hydroxide scrubber supplied by Organics consists of a skid-mounted package of equipment containing a vertical scrubber column and associated pumping and controls. A solid chemical mixing tank is provided to take bagged chemicals.

Where height is a restriction (typically around 6 metres but subject to design evaluation), horizontal scrubbers are available as an option.

The removal of hydrogen sulphide is a basic requirement when working with the output from anaerobic digesters located at, for example, pigs farms.

Where the objective is to destroy the transporting gas as well as the hydrogen sulphide, Organics is able to offer thermal oxidisers that can reduce 20,000 ppm of hydrogen sulphide to less than 0.5 ppm.



Organics Limited

The Barclay Centre
University of Warwick Science Park
Coventry CV4 7EZ,
United Kingdom
T: +44 (0)2476 692141
F: +44 (0)2476 692238
E: comms@organics.com
W: www.organics.com