Gas Sensor

SAMPLE POINT LOCATIONS

Specification Sheet G973 Issue Cv1

A key feature of the installation is the correct location of the sensing point. Several factors must be taken into account, the most important being the density of the gas.

- Under still air conditions, a 'lighter than air' gas such as methane leaking from a small fracture at ground level will plume upwards and outwards approximating a cone shape. As the gas rises, it displaces air from the immediate vicinity creating turbulence. Consequently, rapid dilution begins to occur and unless a sensor is positioned within the plume, there may be no initial indication of a leak. As gas continues to escape, the concentration rises to ceiling level and begins to layer. In time, the concentration at ceiling level will increase, and this in turn will displace air downwards.
- Dangerous concentrations will therefore tend to occur at ceiling level and the thickness of this layer will increase from the highest point downwards with the passage of time.
- Ventilation of the room will of course alter the situation significantly, but it should be remembered that if the ventilator is not at ceiling level, a dangerous concentration can still occur between the top of the ventilator and the ceiling.
- For heavier than air gases such as propane or butane, the formation of dangerous layers occurs at ground level. These gases tend to behave like water and will run down gradients and pool at the lowest point.
- Duct mounted sensors should be positioned so as to minimise the effect of pressure on the sensor cell, this can be achieved by mounting the detector in the push side of the fan/pump duct at or as close to atmosphere as possible.
- The number of sensing points required in individual rooms is determined by the number of possible hazards in the vicinity. Gas leakage may occur around valves, flanges and anywhere where gas pipes are jointed. It may be possible to cover several probable gas leaks in one room by the careful siting of a single sensor. Cable ducts, trenches and manholes are also likely places where a build-up of heavy gases may collect.
- When siting a sensor point in such places, it is most important to ensure that there is no likelihood of flooding by water, or excessive dust which may block a detector head sintered disc and prevent gas reaching the sensor cell or block up a gas sampling pipe.
- When monitoring gases outside, those lighter than air will be quickly dispersed, but gases heavier than air will tend to form in thick layers and again cause a dangerous hazard. When siting sensors outside, prevailing winds must be taken into consideration and adequate protection provided to resist wind and rain.
- A major consideration is access to sensors for gas testing and sensor cell replacement. For inaccessible high-level locations, GDS pump aspirated sensors located at chest height, having fixed sample lines to the target areas enable uncompromised sensor positioning to be achieved. As a second option, test gas fixed lines may be run from ground level directly to the sensor using an appropriate detection head adapter fitting. See document C1892.

Density (air = 1)			
Acetone	2.0	n-Hexane	3.0
Ammonia	0.6	Hydrogen	0.1
Benzene	2.8	Methane	0.6
n-Butane	2.0	n-Octane	3.9
Carbon Monoxide	1.0	n-Pentane	2.5
Ethane	1.0	n-Propane	1.6
Ethyl Alcohol	1.6	Xylene	3.7

For further information see BSEN 60079-10/BS 60080
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