

# Chemgard<sup>®</sup> Monitor **Solutions** for **Hazardous Environments**



## Application

The Chemgard Photoacoustic Infrared Gas Monitor uses photoacoustic infrared (IR) sensing technology to provide precise, low-cost, high-performance monitoring for a variety of gases such as hydrocarbons, solvents, alcohols, carbon dioxide, carbon monoxide, and toxic gases.

The instrument typically draws the gas sample via an internal pump, allowing the unit to be mounted in a location that is convenient for the operator. Though a general-purpose configuration is standard for the Chemgard, MSA offers a variety of enclosures and configurations for installation in other environments.

*Below are definitions of various area classifications as defined by the National Electric Code:*

## Hazardous Environments

The National Electrical Code (NEC) defines and classifies hazardous environments.

### **Class I, Division 1 – an environment:**

- In which ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors can exist under normal operating conditions; or
- In which ignitable concentrations of such flammable gases, flammable liquid-produced vapors or combustible liquids above their flash points may exist frequently because of repair or maintenance operations or because of leakage; or
- In which breakdown or faulty operation of equipment or processes might release ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors and might also cause simultaneous failure of electrical equipment in such a way as to directly cause the electrical equipment to become a source of ignition.

### **Class I, Division 2 – an environment:**

- In which volatile flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors are handled, processed, or used, but in which the liquids, vapors, or gases will normally be confined within closed containers or closed systems from which they can escape only in case of accidental rupture or breakdown of such containers or systems or in case of abnormal operation of equipment; or
- In which ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors are normally prevented by positive mechanical ventilation and which might become hazardous through failure or abnormal operation of the ventilating equipment; or
- That is adjacent to a Class 1, Division 1 location, and to which ignitable concentrations of flammable gases, flammable liquid-produced vapors, or combustible liquid-produced vapors above their flash points might occasionally be communicated unless such communication is prevented by adequate positive-pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.

**Unclassified Location** – Locations determined to be neither Class I, Division 1; Class I, Division 2; Class 1, Zone 0; Class I, Zone 1; Class I, Zone 2; Class II, Division 1; Class II, Division 2; Class III, Division 1; Class III, Division 2; Zone 20; Zone 21; Zone 22; or any combination thereof.

*MSA offers multiple system architectures targeting the design requirements of the locations described above. Each design can be modified to ensure adherence to applicable safety standards, including but not limited to NFPA 70, NFPA 496 and ANSI/ISA-TR12.13.03-2009.2*



*Because every life has a **purpose...***

## Solution

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The Chemgard Monitor can be designed to operate in the following configurations:<sup>1</sup>

- Installed in a classified environment, sampling from a classified or unclassified environment
- Installed in an unclassified environment, sampling from the same environment
- Installed in a unclassified environment, sampling from a classified environment

To meet your specific installation configuration needs MSA offers the following:

- MSA can supply the sample draw system housed within an explosion-proof enclosure. All sample lines are fitted with flashback arrestors at the enclosure and all wiring passes through sealed conduits.
- Alternatively, MSA can supply the sample draw system housed within a purged cabinet. For this configuration, the customer must supply air or nitrogen with which to pressurize the enclosure, preventing hazardous gas from entering. A higher flow rate of purge gas can be supplied to ensure that the environment within the enclosure does not exceed the LEL threshold with a leak of the sample inside the cabinet. Depending on the classification of the environment, MSA can provide an X-purge or Z-purge.
- MSA can supply the sample draw system in a general purpose, purged or explosion-proof housing with a combustible sensor mounted within the enclosure. This sensor monitors the enclosure environment and detects the gas accumulation within the enclosure. The LEL sensor will detect gas if a leak has occurred and disconnect power to the monitor to prevent open electronics from igniting the leak inside the enclosure.<sup>2</sup>

MSA can provide gas sampling solutions that meet your application needs. The MSA Custom Products team has decades of experience working with customers to provide specialized gas detection solutions. Please contact MSA at 1-800-672-4678.

*The above information is a general guideline; while no standard specifically addresses the use of a general purpose analyzer for sampling from a classified area, several standards address aspects of this application. The suitability of equipment shall be determined by the authority having jurisdiction.*

*If ignition-capable gas/vapor enters the monitor it can create an explosive environment inside the enclosure. Prevent ignition capable gas/vapor from entering the monitor by using ventilation, engineering controls, or other suitable means.*

*Internal seals are not gas/vapor tight. If an ignition-capable atmosphere enters the monitor it can create an explosive environment.*

### Notes:

<sup>1</sup> MSA cannot determine the classification of the Chemgard Monitor when drawing from a classified area, per UL, NEC and other regulatory bodies. It is the end user's responsibility to thoroughly understand their installation and the suitability of equipment configuration to their needs, and to ensure that the installation meets all applicable codes.

<sup>2</sup> It is also advisable to take additional measures to stop the transmission of gas from the sample location/exhaust so as to not compromise the unclassified area surrounding the equipment. (e.g., customer-installed solenoid isolation valves). Reference ANSI/ISA-TR12.13.03-2009.

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



**ID 07-0513-MC / April 2013**  
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