# MSA Fixed Gas Detection Solutions **for Ethylene Applications**

MSA The Safety Company

*Every day we use organic materials such as detergents, plastics, tires, paint, and insulation. All of these products are created using ethylene as the raw material. Ethylene, a colorless, flammable gas, is formed by cracking light hydrocarbons from natural gas, followed by heating, cooling, compression, and distillation processes.*



## Application

Ethylene poses a dual risk to worker safety; it is extremely toxic with an eight-hour Time Weighted Average of 200 ppm. Ethylene is also potentially highly explosive with a Lower Explosive Limit of 2.7 percent by volume. As its molecular weight is similar to air, ethylene does not rapidly rise and thus can become a breathing zone hazard, thereby introducing another significant safety planning factor. As a result of this complex risk, implementation of layers of protection is necessary to help ensure a safe working environment.

A typical ethylene manufacturing plant consists of multiple processing areas that should be equipped with safety instrumentation. These areas include cracking furnaces, fractionation and compression areas, cold box, acid gas removal areas, and distillation and separation facilities. In addition to ethylene, gases and vapors likely to require gas monitoring include hydrogen sulfide, carbon dioxide, hydrogen, acetylene, methane, propane, ethane, butane, pentane, and propylene.

## Solution

MSA provides numerous industry-leading technologies for monitoring of potentially hazardous ethylene levels within both toxic and explosive ranges, including point IR LEL detection, open-path IR combustible gas detection, ultrasonic gas leak detection, and photoacoustic IR gas monitoring for low ppm level detection.

## MSA Fixed Gas Detection & Monitoring Solutions for Ethylene Applications

| Product | | Description |
|---|---|---|
| **ULTIMA® X GAS MONITOR** |  | As a hydrocarbon, ethylene can be monitored by the Ultima X Gas Monitor using either catalytic bead or infrared sensors. |
| **ULTIMA XIR GAS MONITOR** |  | Ethylene is a relatively weak infrared absorber; however MSA offers unique advantages through the Ultima XIR Gas Monitor's IR detector design: effective path length is increased by reflecting IR signals via a mirror and back through the gas chamber, effectively doubling path length. This process allows ethylene monitoring to be accurate and reliable. |
| **ULTRASONIC™ EX-5 GAS LEAK DETECTOR** |  | Ethylene production involves extreme temperatures and pressures, therefore leaks generate ultrasonic energy that is "heard" by the Ultrasonic EX-5 Detector. Ultrasonic gas leak detection's primary advantage is that gas does not have to travel to the sensor. As a result, the Ultrasonic EX-5 Detector is immune to detrimental effects of wind and other environmental factors. |
| **ULTIMA OPIR 5 DETECTOR** |  | The Ultima OPIR 5 Detector is an open-path IR detector for ethylene leak detection at maximum distance of 150m between source and receiver; the unit detects any leak that occurs within this path. |
| **CHEMGARD® MONITOR** |  | The Chemgard Monitor detects ethylene with 1ppm resolution within a 0-100 ppm measuring range, offering the best solution for ethylene toxicity concerns. Use of photoacoustic infrared technology allows the Chemgard Monitor to quickly pinpoint ethylene leaks in order for immediate action to be taken. |



**ID 07-0072-MC / September 2013**



**MSA Corporate Center**
1000 Cranberry Woods Drive
Cranberry Township, PA 16066 USA
Phone 724-776-8600
**www.MSAsafety.com**

**U.S. Customer Service Center**
Phone 1-800-MSA-INST
Fax 1-800-967-0398

**MSA Canada**
Phone 1-800-672-2222
Fax 1-800-967-0398

**MSA Mexico**
Phone 01 800 672 7222
Fax 52 - 44 2227 3943

**MSA International**
Phone 724-776-8626
Toll Free 1-800-672-7777
Fax 724-741-1559
Email msa.international@msasafety.com

**Offices and representatives worldwide**
For further information: