



**Monthly Topic: Portable Monitoring - Combustible Gas (LEL)**

- Portable combustible gas monitors, commonly referred to as LEL monitors, are instruments used to detect hazardous levels of a combustible gas or vapor in air.
- Combustible gases will burn when mixed with air (or oxygen) and provided with an ignition source. A combustible gas and air mixture can burn over a wide range of concentrations. Each gas mixture will have a specific minimum concentration above which an ignition source will cause an explosion. This is called the LEL (Lower Explosive Limit) and each combustible gas has a different LEL.
- **LFL (Lower Flammability Limit)** is synonymous with LEL.
- **UEL (Upper Explosive Limit)** – the maximum concentration of a gas or vapor that will burn in air.
- Some combustible gases are lighter than air and some are heavier. Make sure the characteristics of the gas are known before attempting to enter an area containing the gas.
- Portable Single-Gas LEL monitors like the [Macurco GS-1](#) will notify the user with audible, visual and vibrating alarms if an elevated level of combustible gas is detected.
- Portable Multi-Gas monitors like the [Macurco MG-1](#) have similar functionality but contain additional sensors for the detection of other gas hazards.
- **Intrinsic Safety** – a protection technique for electrical equipment focusing on reducing the available electrical and thermal energy to a level where it is too low to cause ignition.
  - Introducing a tool into an explosive environment that has the potential to ignite the combustible gas is not recommended. Make certain that your portable gas monitor is listed for intrinsic safety through a Nationally Recognized Testing Laboratory (NRTL) such as UL, CSA or ATEX.



**GS-1**

**Portable Gas Monitors**

- [GS-1 Single-Gas LEL](#)
- [MG-1 Multi-Gas Monitor](#)
- [Single-Gas \(CO, H<sub>2</sub>S or O<sub>2</sub>\)](#)
- [Portable Gas Detection](#)

**Macurco Literature**

- [Quick Reference Sheet](#)
- [Product Brochure](#)
- [Parking Garage Guide](#)
- [Gas & Product Training](#)

**Combustible Gas News**

- [Gas Well Leaks into Home](#)
- [Methane Explosion in Mine](#)
- [Apartment Butane Incident](#)
- [Propane Tank in U-Haul](#)

**Common Applications**

- |                             |                          |               |
|-----------------------------|--------------------------|---------------|
| ✓ Landfills                 | ✓ Residential Homes      | ✓ Farms       |
| ✓ Restaurants               | ✓ Hotels & Apartments    | ✓ Laundromats |
| ✓ Campers & RV's            | ✓ Office Buildings       | ✓ Factories   |
| ✓ Battery Charging Stations | ✓ Schools & Universities | ✓ Warehouses  |

**Combustible Gases**

- |  |   |  |
|--|---|--|
| ✓ Hydrogen (H <sub>2</sub> )               | ✓ Butane (C <sub>4</sub> H <sub>10</sub> )  | ✓ Octane (C <sub>8</sub> H <sub>18</sub> )   |
| ✓ Methane (CH <sub>4</sub> )               | ✓ Pentane (C <sub>5</sub> H <sub>12</sub> ) | ✓ Xylene (C <sub>8</sub> H <sub>10</sub> )   |
| ✓ Ethane (C <sub>2</sub> H <sub>6</sub> )  | ✓ Hexane (C <sub>6</sub> H <sub>14</sub> )  | ✓ Decane (C <sub>10</sub> H <sub>22</sub> )  |
| ✓ Propane (C <sub>3</sub> H <sub>8</sub> ) | ✓ Heptane (C <sub>7</sub> H <sub>16</sub> ) | ✓ Acetylene (C <sub>2</sub> H <sub>2</sub> ) |

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