

**Q: To which standard(s) are GfG portable gas-detection instruments certified?**

Equipment used in hazardous locations that are subject to the potential presence of explosive gas must be designed and certified as safe for use in the intended area for the intended purpose. Different countries or groups of countries (like the European Union) have different certification requirements. GfG instruments are sold all over the world, so they need to carry a lot of different national and harmonized international certifications!

Combustible gas hazardous locations are areas where the atmosphere contains, or has the reasonable potential for containing, flammable gases and vapors. A flammable concentration of gas is one that is capable of being ignited if a source of ignition is present. When you are working in an area with the potential presence of an explosive gas, you can't afford to take a chance with the equipment!

In countries that belong to the European Union, GfG instruments are sold under their ATEX Certifications. EEC directives require that equipment and protective systems intended for use in potentially explosive atmospheres must carry ATEX (Atmosphères Explosibles) certification. If a product / piece of equipment has official ATEX certification, it has been fully tested and approved to be safe to use in hazardous / explosive atmospheres. GfG instruments also carry CE (Conformité Européenne) certification which indicates that the product conforms with all other relevant EEC product norms and directives.

GfG instruments also carry International Electrotechnical Commission (IEC) Certifications to standards relating to equipment for use in explosive atmospheres (IECEx System). IECEx certifications are based on harmonized international standards that are recognized by the signatory nations that belong to the IEC.

Combustible gas hazardous locations are defined a little differently in North America compared to the UK and Europe. In North America, the most widely used hazardous location classification scheme is based on the National Electric Code (NEC) NFPA® 70, Articles 500 - 506. The NFPA® scheme divides hazardous locations into three classes that are based on the characteristics of the flammable materials. "Class I" includes gases and vapors. The classes are further divided into divisions based on the risk of fire or explosion the class of material represents, and the probability of being present in a potentially hazardous quantity.

The NEC / NFPA® scheme divides flammable gases into four "gas groups" identified by means of a "typical" gas with flammability characteristics that fall into the group. The groups include additional gases with similar flammability characteristics. For instance, the most highly explosive gas is acetylene, which is in Group A. Group B includes hydrogen, butadiene, and other gases with similar flammability characteristics. Group C includes ethylene, while Group D includes ammonia, ethanol, methanol, natural gas, methane, acetone, and many other VOC vapors, as well as propane.

In the UK and Europe, the hazardous location classification scheme is based on "Zones" that are defined by International Electrotechnical Commission (IEC) and European Committee for Electrotechnical Standardization (CENELEC) standards.

Portable GfG instruments sold in North and South America carry multiple CSA® certifications as intrinsically safe for use in hazardous locations. Most GfG portable instruments are c-CSA-us Certified® as Intrinsically Safe for use in Hazardous Locations characterized by the presence of Class I Division 1 Gas Groups A, B, C and D combustible gases. The small "usa" in the certification marking indicates the instrument has been tested and verified to be in conformity with

all relevant USA requirements. The coveted small “c” in the marking indicates conformity with the even more rigorous requirements for sale in Canada.

Most GfG portables carry a second CSA® certification according to the IECEx Zone scheme. These instruments are c-CSA-us Certified® as intrinsically safe for use in Zone 0 hazardous locations. The difference between Zone 0 and Zone 1 certification sounds minor, but it is a really big deal. In Zone 1 hazardous locations ignitable concentrations of gas can occur but are not common. In Zone 0 locations ignitable concentrations of gas are always expected to be potentially present.

The Zone classification scheme is more and more commonly being used in the USA and Canada. Many refineries, chemical plants, gas production and transmission facilities and oil platforms have designated Zone 0 areas. Any equipment taken beyond the HAZLOC perimeter must have Zone 0 certification. This is not a problem for GfG!

GfG instruments are also available in special versions that carry additional certifications. For instance, the G450 4 gas monitor is available in an MSHA (Mine Safety and Health Administration) Certified version. An MSHA certification is required for instruments that are used at MSHA regulated sites. Some state agencies also require MSHA certification for instruments used in certain applications, such as underground tunneling and construction.

Finally, GfG instruments carry many additional certifications for use in specific countries or activities. Some of these additional certifications include Inmetro Certification for sale in Brazil, SABS Certification (South African Bureau of Standards) for sale in South Africa.

As part of the certification requirements, GfG Quality Systems and production procedures are audited multiple times per year by the NRTL or “Notified Body” that issues the certification. Maintaining, updating, and adding new certifications is a full-time job for several of our engineers in the USA and Europe. And as you might expect, securing and maintaining these certifications is an extremely expensive process. But it is absolutely worth every penny when it comes to ensuring GfG instruments are safe for our customers use in hazardous locations!

If you are interested in this topic, GfG has an excellent application note, “*Protective Concepts in Combustible Gas and Vapor Detection*” that discusses certification and electrical safety issues in greater detail at the following link: [https://goodforgas.com/wp-content/uploads/2013/12/AP1024\\_Protective\\_Concepts\\_in\\_Combustible\\_Gas\\_and\\_Vapor\\_Detection-25\\_SEP\\_18\\_low\\_res.pdf](https://goodforgas.com/wp-content/uploads/2013/12/AP1024_Protective_Concepts_in_Combustible_Gas_and_Vapor_Detection-25_SEP_18_low_res.pdf)