

# Basics of hazardous locations

## World standards

World standards and what they mean. In this Section we will outline the different Standards used throughout the world and what they mean for products specified for use in Hazardous Areas. Below is a map of the world which illustrates the Standards that are generally used in these regions.



Product Approvals

									
UL	CSA	UL	CSA	IEC	IECEx	ATEX	EurAsian	INMETRO	PCEC
		CLASS & DIV	CLASS & ZONES						

GROUPS & ZONES

### UL (America) & CSA (Canada)

NFPA 70 produces the National Electric Code (NEC). It is referenced as the world's most widely used and accepted code for electrical installations. Chapter 5 of the National Electrical Code (NEC) focuses on special occupancies including those for hazardous locations.

Underwriters Laboratories Inc. (UL), Canadian Standards Association (CSA), Factory Mutual (FM), and Intertek (ETL), are independent organizations that test for public safety. Their purpose is to determine whether or not devices and equipment submitted to them are safe and can be used in the NEC category for which they were designed. To do this, these agencies maintain extensive laboratory and testing facilities. It is not the function of these agencies to perform actual enforcement of the National Electric Code. However, as previously indicated, inspection authorities use the certifications and listings from these agencies in carrying out their inspections of hazardous areas.

The NEC has been adopted for electrical wiring in the United States and other countries. Other jurisdictions that use the NEC are Mexico, Costa Rica, Venezuela, Colombia and Saudi Aramco in the Middle East.

The Canadian Electrical Code, CE code, or CSA C22.1 is a standard published by the Canadian Standards Association pertaining to the installation and maintenance of electrical equipment in Canada.

Also, a reference is "Recommended Practice for Classification of Locations for Electrical Installations at Petroleum Facilities Classified as Class I, Division 1 and Division 2" published as API 500, (American Petroleum Institute).

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### The ATEX Europe Directives

ATEX requires employers to eliminate or control risks from dangerous substances and to classify areas where explosive atmospheres may occur into zones, as laid down in regulations. ATEX Directives are designed to protect employees, the public and the environment from accidents owing to explosive atmospheres and since July 1st 2006 all existing sites, as well as new sites, must be fully ATEX compliant.

The directive ATEX 94/9/CE (2014/34/UE as of April 20th 2016), applies to equipment suppliers and manufacturers and ATEX 99/92/CE applies to end users. These directives compliment each other, but have different purposes. ATEX 94/9/CE covers both electrical and non-electrical products for use in hazardous areas.

Any product sold within the European Union designed for use in hazardous areas must be ATEX certified and bear the ATEX marking in conjunction with CE marking. This obligation is placed upon the manufacturer of the product is aimed at facilitating movement of goods within the EU.



### IECEx (International certification system)

The IECEx issues an international certificate of conformity for products used in a hazardous area.

This system provides:

- A single certification of conformity for manufacturers to comply that includes:
- Testing and assessment of products to IEC standards including a full test report.
- Ongoing surveillance of manufacturers' premises.
- A fast-track process for countries where regulations still require the issuing of national Ex certificates or approvals.

This certification system is in the process of being adopted worldwide by all the known standards across the world but countries are all working to various timelines.



### EurAsian Conformity Mark (Customs Union)

EurAsian Conformity Mark follows similar rules to that of IECEx as far as the breakdown of the zones and other criteria are concerned.

EurAsian Conformity Mark is the standard for the Customs Union which includes the Russian Federation, Kazakhstan, Belarus and Armenia.



### INMETRO (Brazil)

The National Institute of Metrology, Standardization and Industrial Quality (INMETRO) is the government body responsible for the implementation of measurement, safety and quality standards for electrical and electronic products. It guides the activities of accreditation, inspection, testing and certification bodies in Brazil which issue the products' certificates.



### PCEC (China)

Products placed on the Chinese market shall be certified according to the national regulations in force.

PCEC is accredited by CNAS (China National Accreditation Service for Conformity Assessment) for product testing and issuance of certificates of conformity of products used in hazardous areas.

**Electrical materials for use in potentially explosive atmospheres must conform to major certification standards: IEC, EN, NEC and CEC.**