

EQUIPMENT CERTIFICATION

Equipment for use in hazardous locations must be certified to an appropriate National Standard and marked as such by an accredited third party testing organization. Follow-up inspection to ensure conformance is part of the program. Products may carry multiple markings for multiple countries. The following is a brief description of the National Requirements.

Important Listing Information

The specific requirements for product certification vary from country to country. While UL, FM and CSA are similar in their approach, subtle differences still exist.

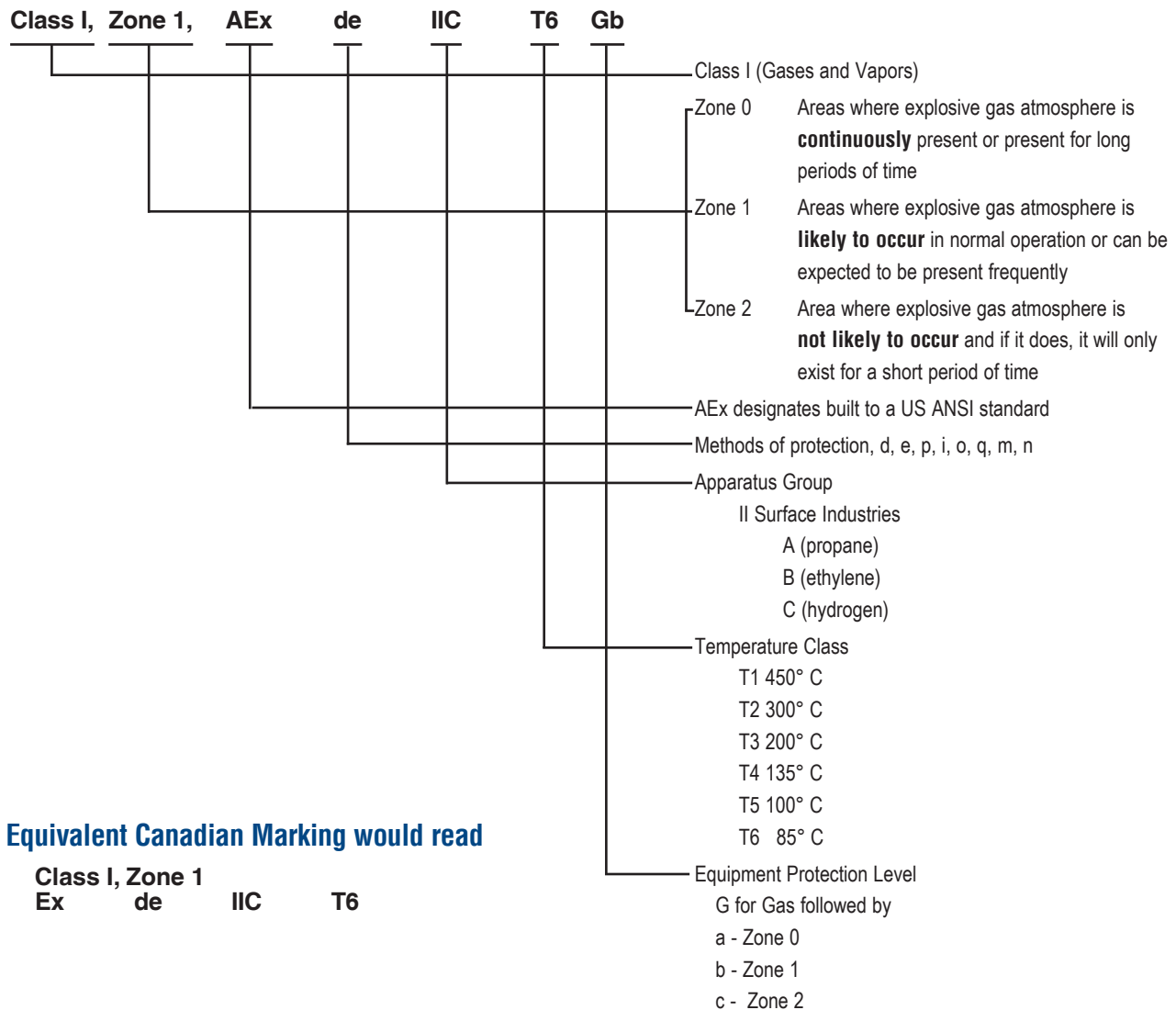
North American certifications permit conduit or cable entries to be field installed provided appropriate bonding and grounding requirements are followed.

Marking

Typical North American Marking to NEC 500

Class I, Divisions 1 or 2, Groups A, B, C & D, T4 (T-Code)
 Class II, Divisions 1 or 2, Groups E, F & G, T4 (T-Code)
 Class III,
 Enclosure Type 3, 4, 4X

Typical U.S. Marking to NEC 505

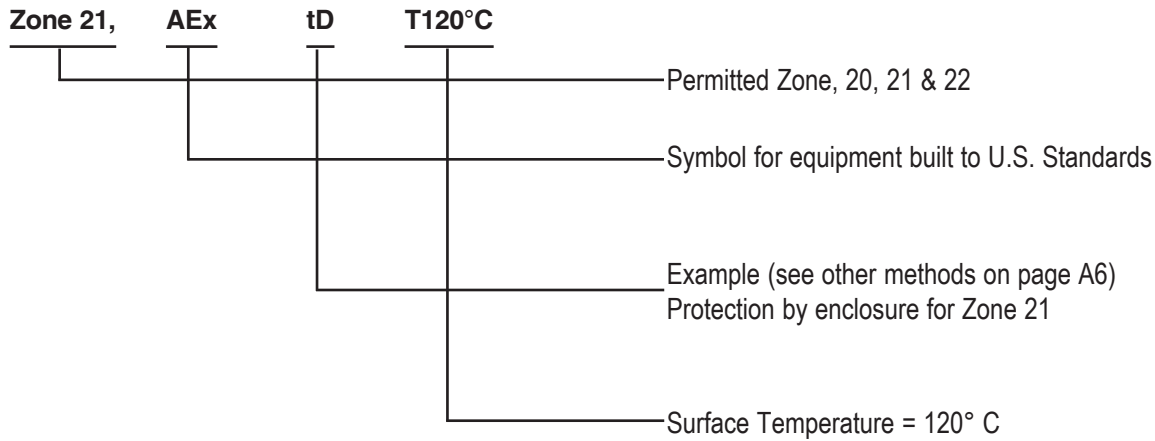


Equivalent Canadian Marking would read

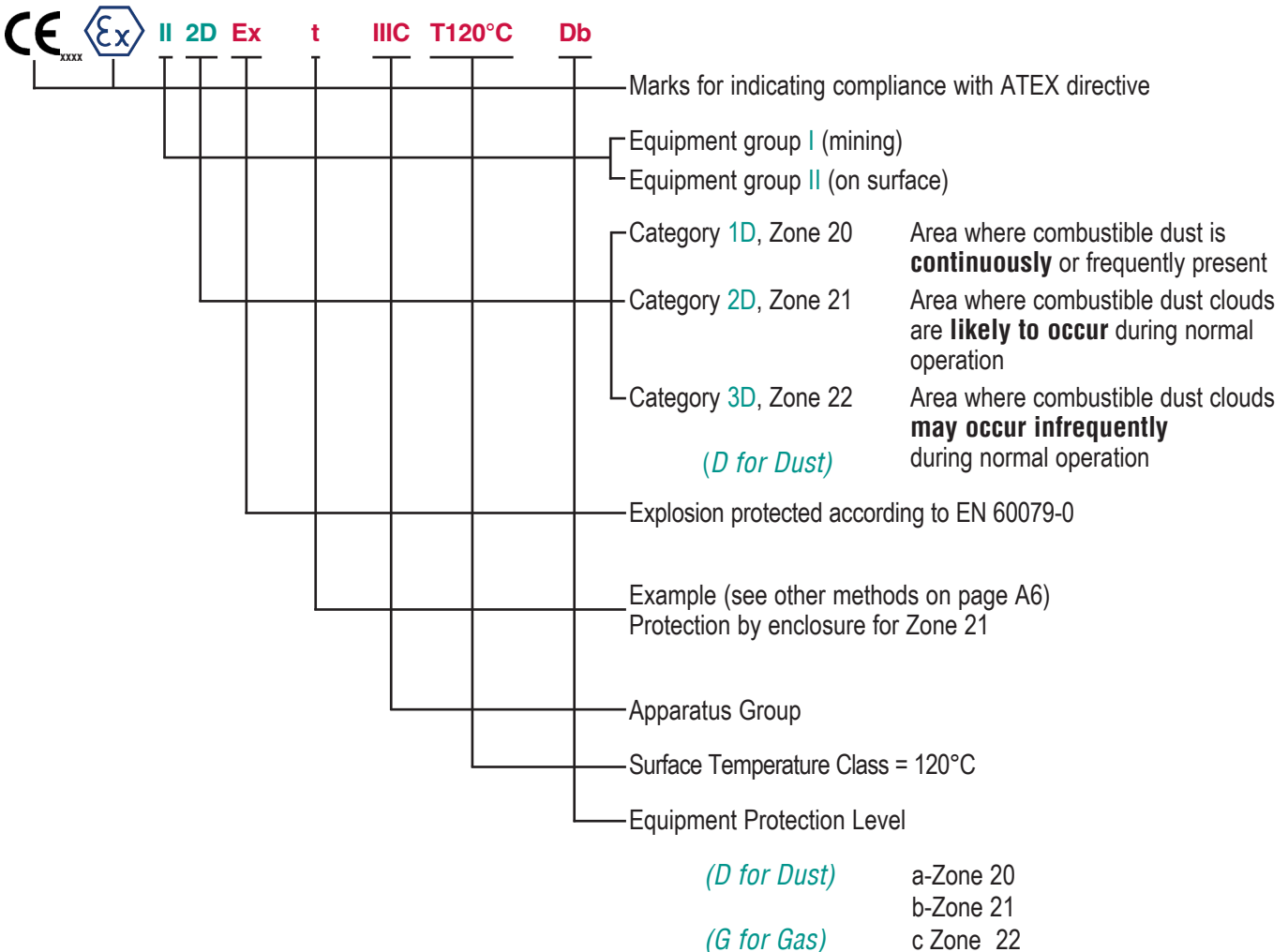
Class I, Zone 1
Ex de IIC T6

Typical U.S. Marking to NEC 506

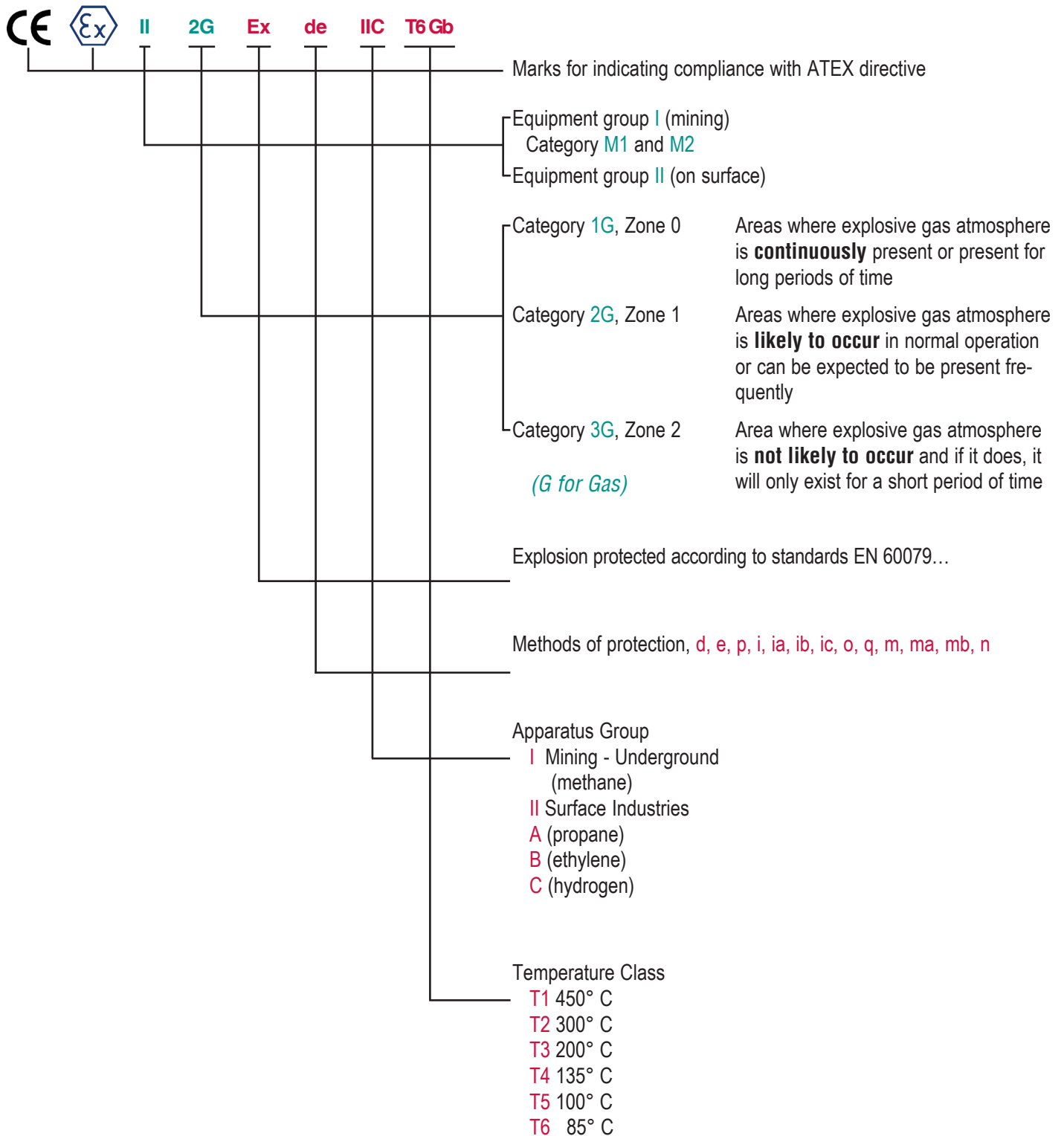
(Dust Zones not adopted by Canada yet)



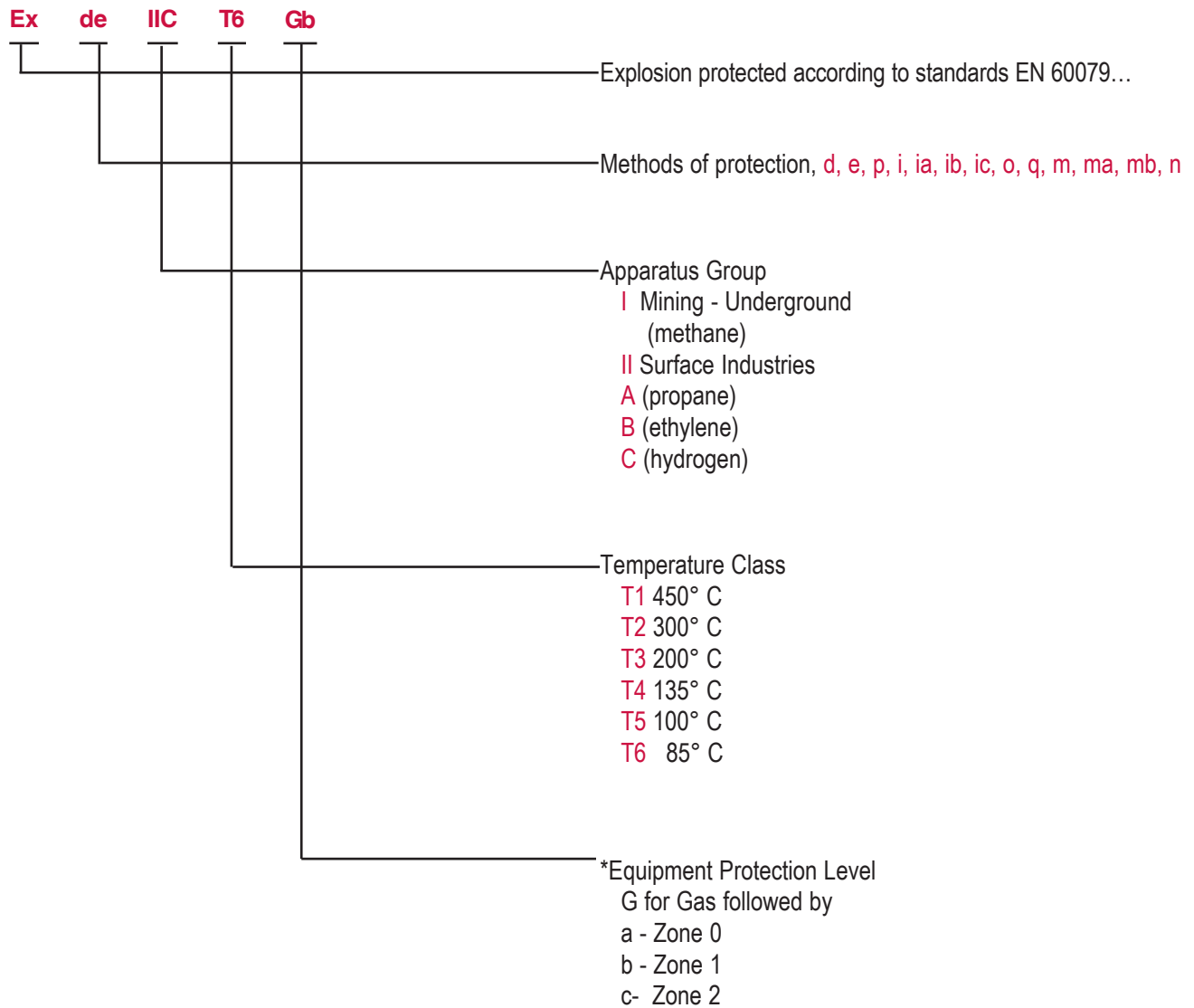
Typical European ATEX/GENELEC Marking for Dust Explosion Protection



Typical European ATEX/GENELEC Marking for Dust Explosion Protection



Typical **IECEx** Marking for Gas Explosion Protection



ATEX DIRECTIVE

The ATEX Directive 94/9/EC is a directive adopted by the European Union (EU) to facilitate free trade in the EU by aligning the technical and legal requirements in the Member States for products intended for use in potentially explosive atmospheres.

This Directive applies to electrical and non-electrical equipment/components and protective systems. The ATEX Directive became mandatory on July 1, 2003.

Equipment located outside potentially explosive atmospheres are also covered by the ATEX Directive under the following conditions:

- The equipment is a safety device, controller or regulatory device; and
- The equipment is required for the safe function of equipment or protective systems with respect to the risk of explosion.

All equipment under its scope is required to bear the European CE Marking as verification of compliance with the Directive (the CE Marking will not appear on components defined by this Directive). The ATEX Directive specifically defines procedures for the evaluation of a product's design and production based on Equipment Groups and Categories. This is briefly outlined below.

Equipment Group I Overview

Equipment intended for use in underground parts of mines, and to those parts of surface installations of such mines, liable to be endangered by firedamp and/or combustible dust.

Equipment Category	Protection	Comparison To Current IEC Classification
M1	2 levels of protection; or 2 independent faults	Group I
M2	1 level of protection based on normal operation	Group I

Equipment Group II Overview

Equipment intended for use in other than Equipment Group I places that are liable to be endangered by explosive atmospheres.

Equipment Category	Protection	Comparison To Current IEC Classification
1G 1D	2 levels of protection; or 2 independent faults	Group II, Zone 0 (gas) Zone 20 (dust)
2G 2D	1 level of protection based on frequent disturbances; or equipment faults Zone 21 (dust)	Group II, Zone 1 (gas)
3G 3D	1 level of protection based on normal operation	Group II, Zone 2 (gas) Zone 22 (dust)

ATEX Marking

The equipment for ATEX identifies the category which indicates a risk of the equipment becoming a source of ignition. The table at right shows the relationship between Categories and Zones. Note that the Zone represents only the risk of a release of flammables into the area.

NOTE: As an alternative to the relationship given in the table at right between Categories and Zones, the required Category of equipment may be selected on the basis of risk, i.e. taking into account the consequences of an ignition. This may, under circumstances, require a higher Category or permit a lower Category than defined in the table.

Zone	Categories
0	1G
1	2G
2	3G
20	1D
21	2D
22	3D

Differences Between the Old and New Directives

The main differences are:

- The inclusion of non-electrical equipment
- The inclusion of dust atmospheres
- Requirements for safety related devices (flame arrestors, suppression systems etc) and safe area equipment
- Additional quality system requirements
- The need to produce a 'Technical File'

Products Covered

The Directive includes equipment and safety or control devices installed outside the potentially explosive area but having an explosion protection function. A wide range of products comes within the definition of equipment, including electric motors, compressors, diesel engines, lighting fittings, control and communication devices and monitoring and detection equipment, to name but a few. "Protective Systems" are also included, and include items that prevent an explosion that has been initiated from spreading or causing damage. They include flame arrestors, quenching systems, pressure relief panels and fast-acting shut-off valves to name but a few.

Product Exclusions

The Directive, however, does exclude the following product types:

- Medical devices
- Products for use in the presence of explosives
- Products for domestic use
- Means of transport by air or on road or rail or water networks.
- Sea-going vessels and mobile offshore units
- Military equipment
- Personal protective equipment covered by directive 89/686/EEC

Vehicles intended for use in an explosive atmospheres are not excluded.

For more info about ATEX, visit http://ec.europa.eu/enterprise/ATEX/index_en.htm

CE MARKING

The CE mark is a mandatory European marking for certain product groups to indicate conformity with the essential health and safety requirements set out in European Directives. The letters 'CE' are an abbreviation of Conformité Européenne, French for European conformity. The CE mark must be affixed to a product if it falls under the scope of the so called 'New Approach' Directives. Without the CE marking, and thus without complying with the provisions of the Directives, the product may not be placed in the market or put into service in the fifteen member states of the European Union and Norway, Iceland and Liechtenstein. However, if the product meets the provisions of the applicable European Directives, and the CE mark is affixed to a product, these countries may not prohibit, restrict or impede the placing in the market or putting into service of the product. Thus, CE marking can be regarded as the products trade passport for Europe. For more info about CE marking, visit www.eurunion.org/legislat/standard/standard.htm



SCHEME

The objective of the IECEX Scheme is to facilitate global trade in electrical equipment intended for use in explosive atmospheres by eliminating the need for multiple national certification.

The IECEX Scheme provides the means for manufacturers of Ex equipment to obtain certificates of conformity that will be accepted at national level in all participating countries. A certificate of conformity may be obtained from any certification body accepted into the Scheme. The certificate will attest that the equipment design conforms to the relevant IEC Standards. The final objective of the IECEX Scheme is world-wide acceptance of one standard, one certificate and one mark.

For the IECEX Scheme to achieve its long term objective, every national Standard for which application is made by participating countries will need to be identical to the corresponding IEC Standard. For countries whose national Standards are not yet identical to the IEC Standards, a transitional period will be necessary to allow time for participating IECEX Scheme member countries to adjust their national standards to the IEC standards and work toward national acceptance of IECEX Certificates of conformity and the IECEX mark.

For more info about IECEX Scheme, visit www.IECEX.com