

ATEX DIRECTIVES IN GAS DETECTION: CONFORMITY AND IMPLICATIONS

THE NEW ATEX 94/9/CE DIRECTIVE

- ❑ Applicable since 01-03-1996
- ❑ Mandatory from 01-07-2003

The directive ATEX 94/9/CE “New Approach Directive” takes into account all the explosion risks of any nature that may be source of ignition.

It is applicable to all products, even if not electrical, that are used within the potentially explosive area

The “New Approach Directive” gives the “Essential Safety Requirements” to be compatible with potentially explosive atmospheres, any requirements shall comply with the above ESR

Safety devices (gas detectors) must function independently of any measurement or control devices required for operation (ESR Annex II I.5.1).

The Directive take in consideration equipment for installation in Group II (surface) and in Group I (mines) environments, considering that explosion risk, protection means and testing methods are very common to both typologies, though the classification remains different. Criteria are set to classify the gas detectors by categories in function of the protection level and the zone of use (see Classification of Apparatus table). Different procedures on how to assess conformity are set in function of product and its category. For example, electrical devices of category 1 and 2 are subjected to certification of the prototype by a Notified Body (EC-Type Certification – Annex III) as well as to production surveillance by the Notified Body (see Conformity Evaluation table).

The following devices/applications are excluded from the scope of the Directive:

- Medical devices
- Explosive and unstable chemical substances
- Equipment intended for use in domestic environments
- Personal protective equipment covered by Directive 89/686/EEC
- Vessels and offshore units
- Means of transport

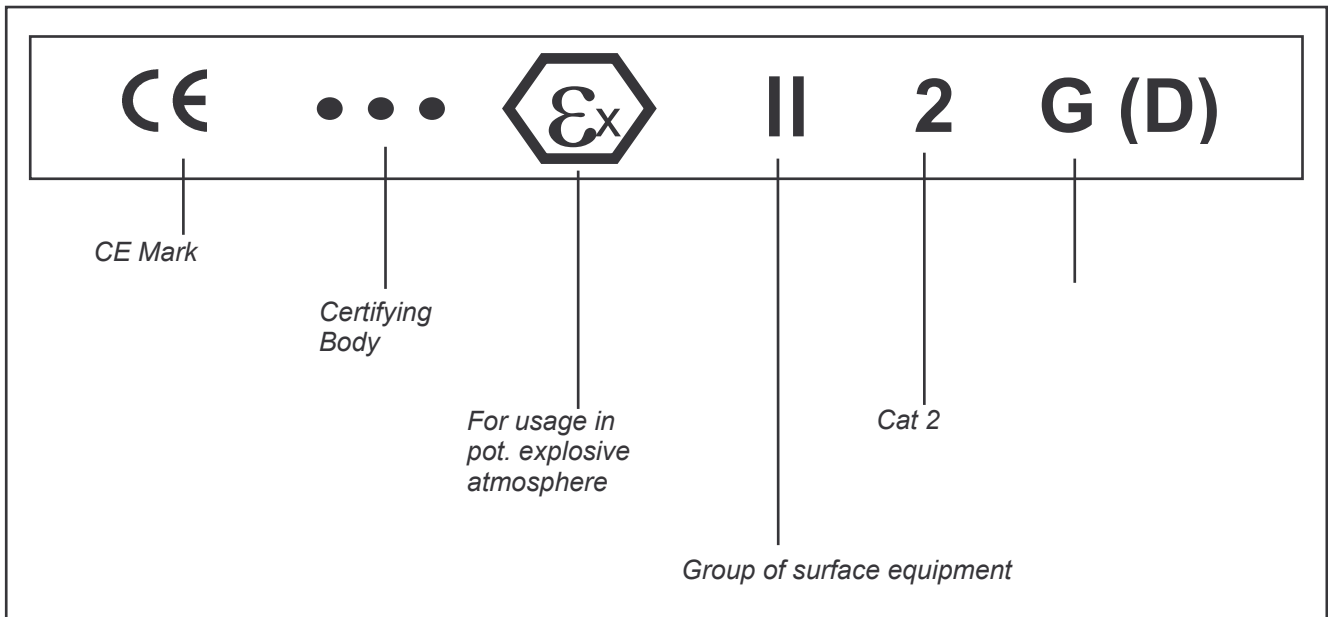
Classification of Apparatus

GROUP	EQUIPMENT CATEGORY	PRESENCE of EXPLOSIVE ATMOSPHERE	TYPE OF FLAMMABLE ELEMENT	SAFETY LEVEL	PROTECTION MEANS (Failure to consider)	CORRELATION with HAZARDOUS ZONES	EXEMPLE OF CERTIFICATION TYPE
I Mines and connected surface equipment	M1	PRESENCE	Methane Dust	HIGHEST	2 Protection systems (2 independent failures)	-	
	M2	POSSIBLE PRESENCE	Methane Dust	HIGH	1 Protection Mean (1 failure in normal operations)	-	
II Surface apparatus	1	STEADY or for long periods	Gas, Vapour, Fog, Dust	HIGHEST	2 Protection system (2 independent failures)	GAS Zone 0 DUST Zone 20	EEx ia
	2	POSSIBLE PRESENCE	Gas, Vapour, Fog, Dust	HIGH	1 Protection Mean (1 failure in normal operations)	GAS Zone 1 DUST Zone 21	EEx d
	3	LOW POSSIBILITY or for short time	Gas, Vapour, Fog, Dust	MEDIUM	Conventional Protection Mean	GAS Zone 2 DUST Zone 22	EEx n

The Directive applies also to safety or control devices installed outside the hazardous area but having an explosion protection function (for example, electronic boards installed in safe area and connected to remote EEx gas sensors installed in potentially explosive area). The equipment and protection devices conformable to the Directive are to be marked by the symbol of explosion protection epsilon-X into the hexagon as well as are to display a CE mark proving their conformity also to the previously applicables Directives.

Safety devices with a measuring function (gas detectors) must meet a recognized performance standard i.e. (EN 61779 part 1 and part 4) for flammable gas detectors, within the scope of the ESR (Annex II I.5.5 – I.5.6). The same as for the electrical safety, these measuring function devices (gas detectors) for category 1 and 2 are subjected to certification of the prototype by a Notified Body as well as to production surveillance.

NEW CE Mark of Conformity



Conformity Evaluation

- Electrical apparatus of category 1 and 2 (Surface group II)
 - Prototype should be submitted to notified body for certification (CE Type test)
 - Manufacturing surveillance:
 - Verification, made by the notified body, of the quality system adopted by the apparatus manufacturer
 - Or manufacturing process verification by the notified body
- Electrical apparatus of category 3 (Surface group II)
 - Check of the manufacturing process made by the producer
 - Declaration of conformity
 - Technical documentation proving the conformity of the apparatus to normative requirements



Smart 3D with EEx "n" and EEx "d" protection

THE NEW ATEX 99/92/EC (ATEX 137)

- Mandatory from 01-07-2006

The ATEX Directive 99/92/EC, introduced on 16th December 1999 concerns the minimum requirements improving the safety and health protection of workers potentially at risk from explosive atmospheres. It requires employer to:

- Prevent and provide protection against the explosion
- Carry out, document and keep up to date an explosion risk assessment (Directive 89/39/EEC)
- Ensure a safe working environment and appropriate supervision of workers in hazardous areas
- Classify hazardous areas into zones and provide warning signs in a specified form (Directives 92/58/EEC and ATEX 94/9/EEC)

Workplaces used for the first time from 1st July 2003 must comply with the Directive immediately. Existing workplaces must comply with the Directive no later than 30th June 2006. The introduction of ATEX standards should finally harmonize standards throughout the EU for the benefit of both manufacturers and users by improving reliability and reducing the risk of explosion on workplace.

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