HAZARDOUS AREA GUIDE

This information is intended as a guide only and further expert guidance should be sought before placing into service, maintaining or repairing any item of equipment in a Potentially Explosive Atmosphere.

Definition

Potentially Explosive Atmospheres exist where there is a risk of explosion due to mixtures of gas/air, vapour/air, dust/air or other flammable combinations. Where electrical equipment has to be used in these areas, it must be so designed and constructed such that it does not create sources of ignition capable of igniting these mixtures.

Area Classification

Process plants are divided into Zones (European and IEC method) or Divisions (North American method) according to the likelihood of a Potentially Explosive Atmosphere being present.

Note : North American legislation now allows Zones to be used to classify areas, where this practice is used it follows the IEC Zone method.

European & IEC Classification	Definition of zone or division	North American Classification
Zone 0 (gases) Zone 20 (dusts)	An area in which an explosive mixture is continuously present or present for long periods	Class I Division 1 (gases) Class II Division 1 (dusts)
Zone 1 (gases) Zone 21 (dusts)	An area in which an explosive mixture is likely to occur in normal operation	Class I Division 1 (gases) Class II Division 1 (dusts)
Zone 2 (gases) Zone 22 (dusts)	An area in which an explosive mixture is not likely to occur in normal operation and if it occurs it will exist only for a short time	Class I Division 2 (gases) Class II Division 2 (dusts) Class III Division 1 (fibres) Class III Division 2 (fibres)

Gas Groups, dusts and fibres

There are two main gas groups, Group I – Mining only and Group II – Surface Industries.

These categories are used in European and I.E.C. groupings.

Group I is concerned only with underground mining where methane and coal dust are present.

Group II gases occurring in surface industries, are sub-grouped according to their volatility. This enables electrical equipment to be designed to less onerous tolerances if it is to be used with the least volatile gases.

Typical gas/ material	European/I.E.C. Gas Group	North American Gas Group
Methane	I	-
Acetylene	IIC	A
Hydrogen	IIC	B
Ethylene	IIB	C
Propane	IIA	D
Metal dust	-	E
Coal dust	-	F
Grain dust	-	G

Temperature

To guard against hot surfaces igniting gases, all electrical equipment intended for use in Potentially Explosive Atmospheres is classified according to the maximum surface temperature it will reach in service (normally based on a surrounding ambient temperature of 40°C (102°F).

Temperature Classification		Maximum Surface Temperature
European/I.E.C.	North American	
T1	T1	450° C
T2	T2	300° C
	T2A	280° C
	T2B	260° C
	T2C	230° C
	T2D	215° C
T3	T3	200° C
	T3A	180° C
	T3B	165° C
	T3C	160° C
T4	T4	135° C
	T4A	120° C
T5	T5	100° C
T6	T6	85° C

ATEX

After 1st July 2003, the ATEX directive came into force and is a mandatory requirement for all equipment intended for use in Potentially Explosive Atmospheres within the E.U. All relevant MEDC equipment will be covered by the date it comes into force and many are already certified.

It should be noted also that **MECHANICAL** equipment is covered by the ATEX directive so for the first time items such as gearboxes will have to carry ATEX certification.

The equipment coding will be as the current practice plus an additional code as follows:

ExII2GD i.e.

Ex – Explosionproof in accordance with ATEX.

II – Group II surface industries

2 – Category 2 equipment (suitable for use in Zone 1) note: Category 1 is suitable for Zone 0. Category 3 is suitable for Zone 2.

G – suitable for atmospheres containing gas

D – suitable for atmospheres containing dust

Equipment will be CE marked when certified to ATEX.

For more information about hazardous areas, download guide from www.medc.com

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