

Appropriate continuing education or training shall be undertaken by personnel on a regular basis.

NOTE Competency may be demonstrated in accordance with a training and assessment framework relevant to national regulations or standards or user requirements.

## 5 Selection of equipment (excluding cables and conduits)

### 5.1 Information requirements

In order to select the appropriate electrical equipment for hazardous areas, the following information is required:

- classification of the hazardous area including the equipment protection level requirements where applicable;
- where applicable, gas, vapour or dust classification in relation to the group or subgroup of the electrical equipment;
- temperature class or ignition temperature of the gas or vapour involved;
- minimum ignition temperature of the combustible dust cloud, minimum ignition temperature of the combustible dust layer and minimum ignition energy of the combustible dust cloud;
- external influences and ambient temperature.

It is recommended that the equipment protection levels (EPL) requirements are recorded on the area classification drawing. This should also apply even if consequences have not been subjected to risk assessment (see 5.3 and **Error! Reference source not found.**).

### 5.2 Zones

Hazardous areas are classified into zones. Zoning does not take account of the potential consequences of an explosion.

NOTE The previous editions of this standard allocated protection concepts to zones, on the statistical basis that the more frequent the occurrence of an explosive atmosphere, the greater the level of safety required against the possibility of an ignition source.

### 5.3 Relationship between Equipment protection levels (EPLs) and zones

Where only the zones are identified in the area classification documentation, then the relationship between EPL's and zones from Table 1 shall be followed.

**Table 1 – Equipment protection levels (EPLs) where only zones are assigned**

Zone	Equipment protection levels (EPLs)
0	'Ga'
1	'Ga' or 'Gb'
2	'Ga', 'Gb' or 'Gc'
20	'Da'
21	'Da' or 'Db'
22	'Da', 'Db' or 'Dc'

Where the EPLs are identified in the area classification documentation, those requirements for selection of the equipment shall be followed.

NOTE As an alternative to the relationship given in Table 1 between EPLs and zones, EPLs may be determined on the basis of risk, i.e. taking into account the consequences of an ignition. This may, under certain circumstances, require a higher EPL or permit a lower EPL than the defined in Table 1.

## 5.4 Selection of equipment according to EPLs

### 5.4.1 Relationship between EPLs and types of protection

The recognised types of protection according to IEC standards have been allocated EPLs according to Table 2.

**Table 2 – Relationship between types of protection and EPLs**

EPL	Type of protection	Code	According to
'Ga'	Intrinsically safe	'ia'	IEC 60079-11
	Encapsulation	'ma'	IEC 60079-18
	Two independent types of protection each meeting EPL 'Gb'		IEC 60079-26
	Protection of equipment and transmission systems using optical radiation		IEC 60079-28
'Gb'	Flameproof enclosures	'd'	IEC 60079-1
	Increased safety	'e'	IEC 60079-7
	Intrinsically safe	'ib'	IEC 60079-11
	Encapsulation	'm' 'mb'	IEC 60079-18
	Oil immersion	'o'	IEC 60079-6
	Pressurized enclosures	'p', 'px' or 'py'	IEC 60079-2
	Powder filling	'q'	IEC 60079-5
	Fieldbus intrinsically safe concept (FISCO)		IEC 60079-27
'Gc'	Protection of equipment and transmission systems using optical radiation		IEC 60079-28
	Intrinsically safe	'ic'	IEC 60079-11
	Encapsulation	'mc'	IEC 60079-18
	Non-sparking	'n' or 'nA'	IEC 60079-15
	Restricted breathing	'nR'	IEC 60079-15
	Energy limitation	'nL'	IEC 60079-15
	Sparking equipment	'nC'	IEC 60079-15
	Pressurized enclosures	'pz'	IEC 60079-2
Fieldbus non-incendive concept (FNICO)		IEC 60079-27	
'Da'	Protection of equipment and transmission systems using optical radiation		IEC 60079-28
	Intrinsically safe	'iD'	IEC 60079-11
	Encapsulation	'mD'	IEC 60079-18
'Db'	Protection by enclosure	'tD'	IEC 60079-31
	Intrinsically safe	'iD'	IEC 60079-11
	Encapsulation	'mD'	IEC 60079-18
	Pressurized enclosures	'pD'	IEC 61241-4
'Dc'	Protection by enclosure	'tD'	IEC 60079-31
	Intrinsically safe	'iD'	IEC 60079-11
	Encapsulation	'mD'	IEC 60079-18
	Pressurized enclosures	'pD'	IEC 61241-4