

(PREVIEW)

## *Indian Standard*

# **CLASSIFICATION OF HAZARDOUS AREAS (OTHER THAN MINES) HAVING FLAMMABLE GASES AND VAPOURS FOR ELECTRICAL INSTALLATION**

### **1. SCOPE**

**1.1** This standard provides guidance on the classification of areas where flammable gas or vapour risks may arise in order to permit the proper selection of electrical apparatus for use in such areas (*see* Notes I and 2 of 1.4).

**1.2** It is intended for application in all industries where there may be a risk due to the presence of flammable gas or vapour, mixed with air under normal atmospheric conditions (*see* Note 3 of 1.4), but does not apply to,

- a) mining applications susceptible to fire damp;
- b) processing and manufacture of explosives;
- c) areas where risks may arise due to the presence of ignitable dusts or fibres ;
- d) catastrophic failures, which are beyond the concept of abnormality dealt with in this standard (*see* Note 4 of 1.4);
- e) ignition sources other than those associated with electrical apparatus (*see* Note 5 of 1.4) ;
- f) areas where pyroforic substances are handled;
- g) rooms used for medical purposes; and
- h) domestic premises.

This standard does not take into account the effects of consequential damage.

**1.3** Definitions and explanations of terms are given together with the main principles and procedures relating to area classification.

**1.4** The objective of area classification is the notional division of a plant into zones within which the likelihood of the existence of an explosive gas/air mixture is judged to be high medium, low or so low as to be regarded as negligible. An area classification established in this way provides a basis for the selection of electrical apparatus that is protected to a degree appropriate to the risk involved. The type of protection of the apparatus selected will be such that the likelihood of it being a source of ignition, at the same time as the surrounding atmosphere is explosive, is accepted as being small.

## NOTES

**1** Flammable materials for the purpose of area classification include.

- a) petroleum having flash point below 65°C or any flammable gas or vapour in a concentration capable of ignition; and
- b) petroleum or any flammable liquid having, flash point above 65°C where likely to be refined, blended, handled or stored at or above its flash point.

**2** For the purpose of this standard an area is a three dimensional region or space.

**3** Normal atmospheric conditions include variations above and below reference levels of 101.3 kPa (1 013 mbar ) and 20°C provided the variations have a negligible effect on the explosion properties of the flammable materials

**4** Catastrophic failures in this context is applied, for example, to the rupture of a process vessel or pipeline and events that are not predictable

**5** In any plant installation irrespective of size there may be numerous sources of ignition apart from those associated with electrical apparatus. Additional precautions may be necessary to ensure safety in this aspect but these are outside the scope of this standard.

**6** Mists may form or be present at the same time as flammable vapours. This may affect the way flammable material disperses and extent of any hazardous areas. The strict application of area classification for gases and vapours may not be appropriate because the flammability characteristics of mists are not always predictable. Whilst it can be difficult to decide upon the type and extent of zones, the criteria applicable to gases and vapours will, in most cases, give a safe result. However, special consideration should always be given to the danger of ignition of flammable mists.

**7** For the purpose of this standard the terms flammable and explosive may be considered as synonymous.

## REFERENCES

The following referred standard is indispensable for the application of this standard:

<i>IS No.</i>	<i>Title</i>
60079-20 : 1996	Electrical apparatus for explosive gas atmospheres — Part 20: Data for flammable gases and vapours, relating to the use of electrical apparatus
60079-0 : 2004	Electrical apparatus for explosive gas atmospheres — Part 0 General requirements