
British Standard Code of practice for

**Selection, installation and maintenance of electrical
apparatus for use in potentially explosive atmospheres
(other than mining applications or explosive
processing and manufacture)**

Part 2. Classification of hazardous areas

Code de bonne pratique pour la sélection, l'installation et l'entretien des
matériels électriques à utiliser dans les atmosphères explosibles (à l'exception
des applications dans les mines ou de la préparation et la fabrication des explosifs)
Partie 2. Classification des zones dangereuses

Richtlinie für die Auswahl, Aufstellung und Instandhaltung von elektrischen
Betriebsmitteln für explosionsgefährdete Bereiche (außer für Verwendung
im Bergbau oder bei der Verarbeitung und Herstellung von Sprengstoffen)
Teil 2. Klassifizierung von gefährlichen Bereichen

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Foreword

This British Standard has been prepared under the direction of the General Electrotechnical Engineering Standards Committee.

BS 5345 is a revision of CP 1003 : Parts 1, 2 and 3 and should be used for all new installations of electrical apparatus in potentially explosive atmospheres. However, CP 1003 will be retained temporarily as a reference guide for the many existing plants installed according to the earlier code.

Many gases, vapours, mists and dusts encountered in industry are flammable. When ignited, they may burn readily and with considerable explosive force if mixed with air in appropriate proportions. It is often necessary to use electrical apparatus in locations where such flammable materials may be present, and appropriate precautions should therefore be taken to ensure that all such apparatus is adequately protected in order to reduce the likelihood of ignition of any external explosive atmosphere. When using electrical apparatus, potential ignition sources include electrical arcs and sparks, hot surfaces and, in certain circumstances, frictional sparks.

In general, protection against electrical ignition is achieved by implementing one of two procedures. Whenever practicable, the electrical apparatus should be located outside hazardous areas; alternatively the electrical apparatus should be designed, installed and maintained

in accordance with measures recommended for the area in which the apparatus is located.

Several techniques are available for the protection of electrical apparatus in hazardous areas. Some of these techniques (or 'types of protection' as they are known) have been used for many years and have come to be regarded as traditional whilst others have been introduced only recently.

This code of practice describes the basic safety features of these types of protection, full details of which are given in the relevant standards, and recommends the selection, installation and maintenance procedures that should be adopted for electrical apparatus to be used in hazardous areas. This code takes account of the significant developments that have taken place in area classification and in the design, manufacture and use of electrical apparatus for hazardous areas since the preparation of CP 1003.

It is important to note that this code of practice deals with *explosion* hazards due to the presence of flammable gas/air mixtures; it does not provide guidance on the extra precautions to be taken where such gases involve a *toxic* hazard.

This code of practice represents a standard of good practice and takes the form of recommendations. Compliance with it does not confer immunity from relevant legal obligations.

**Amendment No. 1**

**published and effective from 31 July 1989
to BS 5345 : Part 2 : 1983**

**Code of practice for selection, installation and
maintenance of electrical apparatus for use in
potentially explosive atmospheres (other than
mining applications or explosive processing
and manufacture)**

Part 2. Classification of hazardous areas

Revised text

**AMD 5754
July 1989**

Clause 4.4 Special considerations

Delete the first sentence of paragraph 2 and substitute the following.

'If the total quantity of flammable material available for release is small, e.g. laboratory use, whilst a potential hazard may still exist, it may not be appropriate to use area classification.'

**AMD 5754
July 1989**

Clause 7.3.2 Grade of release

Delete the first three sentences and substitute the following.

'It is first necessary to determine whether the total quantity of flammable material available for release from the process equipment item is small (see 4.4) [1] and [2]. If it is considered small, area classification [38] may not be appropriate but certain special precautions may still be necessary [39]. Should the quantity not be considered small, it is necessary to determine [3] if release of flammable material is possible, neglecting catastrophic events (see clause 1).'

**AMD 5754
July 1989**

Figure 1. Determination of type and extent of zone

Delete the existing figure and substitute the new figure 1 attached.

**AMD 5754
July 1989**

Clause A.3 Natural ventilation

Delete the third and fourth sentences of paragraph 1 and substitute the following.

'Where such wall openings are installed they should be designed to provide the maximum air flow. Air distribution within the enclosure will depend upon the layout of plant, etc. and wind pressures imposed. The higher the pressure difference the higher the air change rate in the enclosure.'

After the third sentence of paragraph 3 insert the following.

'Where these buoyancy effects occur they will cause cold air to flow into the base of the hot column, and this will set up air circulations within the enclosure.'

In line 1 of the note, after 'NOTE' insert '1'.

After this note insert the following.

'NOTE 2. Where flammable gases and vapours that are heavier than air are involved, air inlets and air outlets at low level to provide dilution and cross-flow ventilation may be employed. Alternatively, dilution air may be drawn from high level and extracted at low level. Ventilation systems of this type tend to be more complex, and the building geometry and plant locations can have a major influence on the final design.'

Delete the first sentence of item (c) and substitute the following.

'If no temperature difference exists from the inside to the outside of the building, the fitting of roof extraction fans rather than roof ventilators improves upward air flow and consequently ventilation.'

AMD 5754
July 1989

Clause A.4 Artificial ventilation

After the last sentence of paragraph 2 insert the following.

'When using mechanical means for producing air flows it should be borne in mind that, whilst they have good air projection capabilities, i.e. throws of up to 30 fan diameters, depending on design, they have poor suction capabilities, i.e. up to one fan diameter. Therefore whilst roof mounted fans set up a positive air flow from the inside to the outside of the building, providing there are adequate air inlets, they have little influence on air flow patterns within the building.

Ducted systems can provide the means to stir up air in localized pockets where explosive gas/air mixtures would otherwise accumulate.'

AMD 5754
July 1989

Table 2. Natural infiltration into buildings

In column 1, delete 'm²' (in twelve places) and substitute 'm³'.

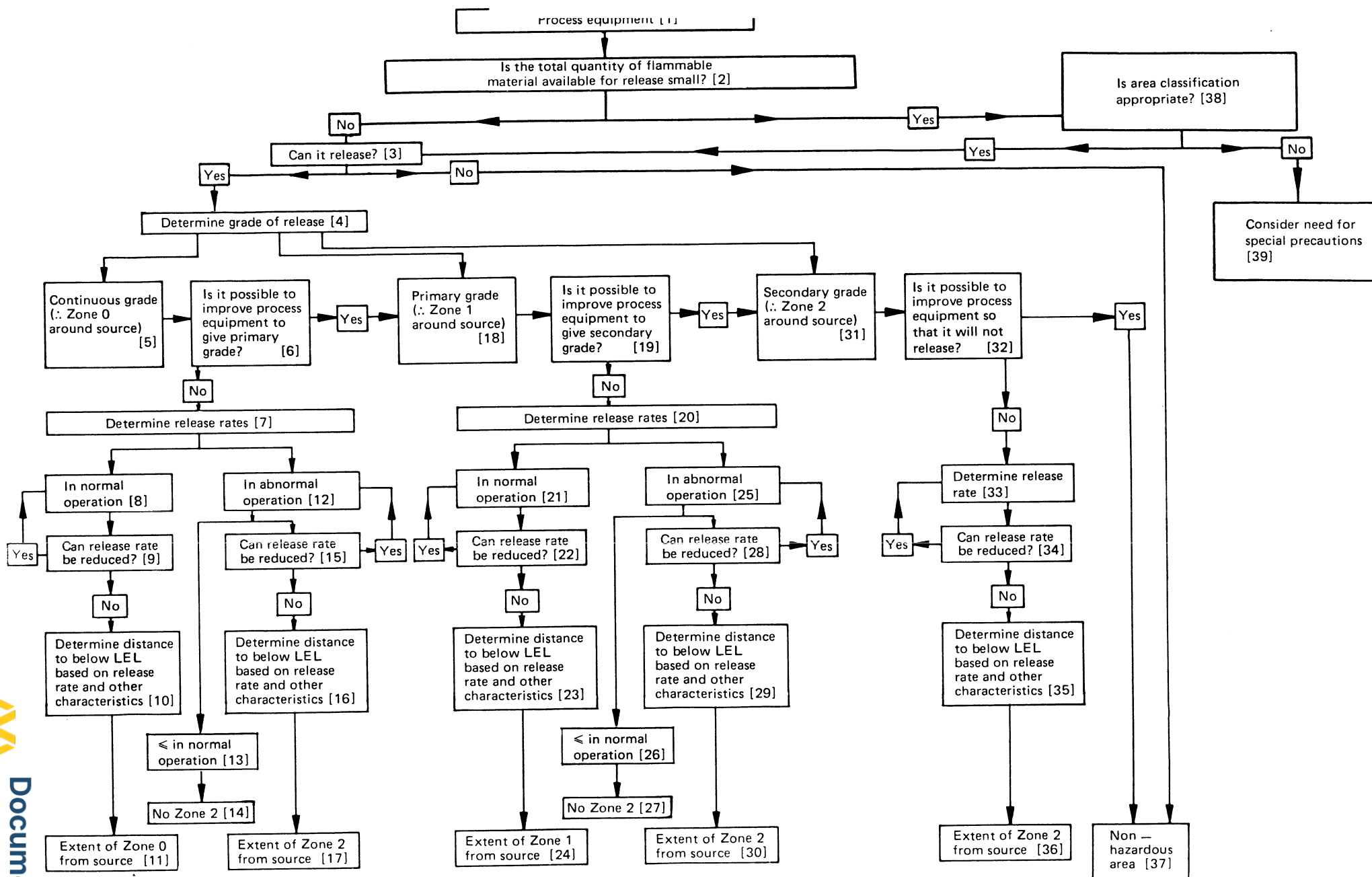


Figure 1. Determination of type and extent of zone

