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Explosive atmospheres -
Part 10-2: Classification of areas - Explosive dust atmospheres

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CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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IEC 60079-10-2 has been prepared by Subcommittee SC31J: Classification of hazardous areas and installation requirements of IEC technical committee 31: Equipment for explosive atmospheres. It is an International Standard.

This third edition of IEC 60079-10-2 cancels and replaces the second edition of IEC 60079-10-2 published in 2015. This edition constitutes a technical revision.

Users of this document are advised that interpretation sheets clarifying the interpretation of this document can be published. Interpretation sheets are available from the IEC webstore and can be found in the "history" tab of the page for each document.

INTRODUCTION

Combustible dusts are hazardous because when they are dispersed in air by any means they could form explosive atmospheres. Furthermore, layers of dust could ignite and act as ignition sources for an explosive atmosphere.

This part of IEC 60079 gives guidance on the identification and classification of areas where such hazards from dust can arise. It sets out the essential criteria against which the hazards due to combustible dusts can be assessed and gives guidance on the design and control parameters which can be used in order to reduce such a hazard. General and special criteria are given for the process of identification and classification of hazardous areas.

This document contains an informative Annex B giving examples for classifying hazardous areas.

1 Scope

This part of IEC 60079 is concerned with the identification and classification of areas where explosive dust atmospheres and combustible dust layers are present in order to permit the proper assessment of ignition sources in such areas.

In this document, explosive dust atmospheres and combustible dust layers are treated separately. In Clause 4, area classification for explosive dust clouds is described, with dust layers acting as one of the possible sources of release. In Clause 7, other general considerations for dust layers are described.

The examples in this document are based on a system of effective housekeeping being implemented in the plant to prevent dust layers from accumulating. Where effective housekeeping is not present, the area classification includes the possible formation of explosive dust clouds from dust layers.

The principles of this document can also be followed when combustible fibres or flyings might cause a hazard.

Atmospheric conditions include variations in pressure and temperature above and below reference levels of 101,3 kPa (1 013 mbar) and 20 °C (293 K), provided that the variations have a negligible effect on the explosive properties of the combustible material. For air with normal oxygen content, typically a volume fraction of 21 % is assumed.

It does not apply to

a) underground mining areas;
b) dusts of explosives that do not require atmospheric oxygen for combustion such as pyrophoric substances, propellants, pyrotechnics, munitions, peroxides, oxidizers, water-reactive elements or compounds, or other similar materials;
c) catastrophic failures or rare malfunctions which are outside the conditions dealt with in this document;
d) rooms used for medical purposes;
e) domestic premises;
f) where a hazard is due to the presence of flammable gas or vapour, but the principles can be used in the assessment of a hybrid mixture (see also IEC 60079-10-1).

NOTE Additional guidance on hybrid mixtures is provided in Annex D.

This document does not consider the effects of consequential damage following a fire or an explosion.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60079-0, *Explosive atmospheres - Part 0: Equipment - General requirements*