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GB 12476.2-2010/IEC 61241-14: 2004

Replace GB 12476.2-2006

Electrical apparatus for use in the presence of combustible dust—Part 2: Selection and installation

可燃性粉尘环境用电气设备

第 2 部分：选型和安装

(IEC 61241-14: 2004, IDT)

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Contents

Foreword

All technical contents of this Part are mandatory.

GB 12476 *Electrical apparatus for use in the presence of combustible dust* divided into several parts are as follows:

— Part 1: Part 1-1: Electrical apparatus protected by enclosures and surface temperature limitation--Specification for apparatus;

— Part 2: Electrical apparatus for use in the presence of combustible dust—Part 2:Selection and installation;

— Part 3: Classification of areas where combustible dusts are or may be present;

— Part 4: Protection by intrinsic safety “iD”;

— Part 5: Protection by enclosures “tD”;

— Part 6: Protection by encapsulation “mD”;

— Part 7: Type of protection “pD”;

— Part 8: Test methods—Methods for determining the minimum ignition temperatures of dust;

— Part 9: Test methods—Method for determining the electrical resistivity of dust in layers;

— Part 10: Test methods—Method for determining minimum ignition energy of dust/air mixtures

… …

This is Part 2 of GB 12476, is identical to IEC 61241-14: 2004 *Electrical apparatus for use in the presence of combustible dust - Part 14: Selection and installation* (English Edition), and revised for selection and installation part of GB 12476.2-2006. Comparison with selection and installation part of GB 12476.2-2006, main changes of this Part are as follows:

Introduction

Many types of dust that are generated, processed, handled and stored, are combustible. When ignited they can burn rapidly and with considerable explosive force if mixed with air in the appropriate proportions. It is often necessary to use electrical apparatus in locations where such combustible materials are present, and suitable precautions must therefore be taken to ensure that all such apparatus is adequately protected so as to reduce the likelihood of ignition of the external explosive atmosphere. In electrical apparatus, potential ignition sources include electrical arcs and sparks, hot surfaces and frictional sparks.

Areas where dust, flyings and fibres in air occur in dangerous quantities are classified as hazardous and are divided into three zones according to the level of risk.

Generally, electrical safety is ensured by the implementation of one of two considerations, i.e. that electrical apparatus be located where reasonably practicable outside hazardous areas, and that electrical apparatus be designed, installed and maintained in accordance with measures recommended for the area in which the apparatus is located.

Combustible dust can be ignited by electrical apparatus in several ways:

- by surfaces of the apparatus that are above the minimum ignition temperature of the dust concerned. The temperature at which a type of dust ignites is a function of the properties of the dust, whether the dust is in a cloud or layer, the thickness of the layer and the geometry of the heat source;

- by arcing or sparking of electrical parts such as switches, contacts, commutators, brushes, or the like;

- by discharge of an accumulated electrostatic charge;

- by radiated energy (e.g. electromagnetic radiation);

- by mechanical sparking or frictional sparking associated with the apparatus.

In order to avoid ignition hazards it is necessary that:

Electrical apparatus for use in the presence of combustible dust—Part 2: Selection and installation

1 Scope

This part of GB 12476 specifies general requirements, additional to those required for basic electrical safety, for the selection of electrical apparatus and instruments and associated equipment, and for the installation of electrical apparatus to ensure safe use in areas where combustible dust may be present in quantities which could lead to a fire or explosion hazard.

NOTE Various parts of the GB 12476 series specify requirements for the design, construction and testing of electrical apparatus. Apparatus within the scope of this standard may also be subjected to additional requirements in other standards.

The application of electrical apparatus in atmospheres which may contain explosive gas as well as combustible dust, whether simultaneously or separately, requires additional protective measures which are not within the scope of this part.

This part includes several types of protection that protect either from ingress of dust or have insufficient energy to cause ignition and provide surface temperature limitation.

The principles of this standard may also be followed when combustible fibres or flyings cause a hazard.

Where the apparatus is required to meet other environmental conditions, for example, protection against ingress of water and resistance to corrosion, additional methods of protection may be necessary. The method used should not adversely affect the integrity of the enclosure. The requirements of this standard apply only to the use of electrical apparatus under normal or near normal atmospheric conditions. For other conditions, additional precautions may be necessary. For example, most flammable materials and many materials which are normally regarded as non-flammable might burn vigorously under conditions of oxygen enrichment. Other precautions might also be necessary in the

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