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Replacing GB/T 12476.3-2017

Explosive Atmospheres - Part 35: Classification of Areas for Explosive Dust Atmospheres

爆炸性环境 第 35 部分：爆炸性粉尘环境场所分类

(IEC 60079-10-2:2015, Explosive Atmospheres - Part 10-2: Classification of Areas - Combustible Dust Atmospheres, MOD)

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Foreword

This document was drafted in accordance with the rules in GB/T 1.1-2020 *Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents*.

This document is Part 35 of GB/T 3836 *Explosive Atmospheres*. GB/T 3836 has released the following parts:

---Part 1: Equipment - General Requirements;

---Part 2: Equipment Protection by Flameproof Enclosures “d”;

---Part 3: Equipment Protection by Increased Safety “e”;

---Part 4: Equipment Protection by Intrinsic Safety “i”;

---Part 5: Equipment Protection by Pressurized Enclosure “p”;

---Part 6: Equipment Protection by Liquid Immersion “o”;

---Part 7: Equipment Protection by Powder Filling “q”;

---Part 8: Equipment Protection by Type of Protection “n”;

---Part 9: Equipment Protection by Encapsulation “m”;

---Part 11: Material Characteristics for Gas and Vapor Classification - Test Methods and Data;

---Part 12: Material Characteristics for Combustible Dusts - Test Methods;

---Part 13: Equipment Repair, Overhaul, Reclamation and Modification;

---Part 14: Classification of Areas - Explosive Gas Atmosphere;

---Part 15: Electrical Installations Design, Selection and Erection;

---Part 16: Electrical Installations Inspection and Maintenance;

---Part 17: Equipment Protection by pressurized Room “p” and Artificially Ventilated Room “v”;

---Part 18: Intrinsically Safe Electrical Systems;

---Part 20: Equipment with Equipment Protection Level (EPL) Ga;

---Part 21: Application of Quality Systems for Equipment Manufacture;

---Part 22: Protection of Equipment and Transmission System Using Optical Radiation;

---Part 23: Group I, Category EPL Ma Equipment Intended to Remain Functional in Atmospheres Endangered by Firedamp and / or Coal Dust;

---Part 24: Equipment Protection by Special Protection “s”;

---Part 25: Requirements for Process Sealing between Flammable Process Fluids and Electrical Systems;

---Part 26: Electrostatic Hazards - Guidance;

---Part 27: Electrostatic Hazards - Test;

---Part 28: Non-electrical Equipment for Explosive Atmospheres - Basic Method and Requirements;

---Part 29: Non-electrical Equipment for Explosive Atmospheres - Constructional Safety “c”, Control of Ignition Source “b”, Liquid Immersion “k”;

---Part 30: Equipment and Components in Explosive Atmospheres in Underground Mines;

---Part 31: Equipment Dust Ignition Protection by Enclosure “t”;

---Part 32: Intrinsically Safe Systems with Electronically Controlled Spark Duration Limitation;

---Part 33: Equipment in Adverse Service Conditions;

---Part 34: Equipment Assemblies;

---Part 35: Classification of Areas for Explosive Dust Atmospheres.

This document serves as a replacement of GB/T 12476.3-2017 *Electrical Apparatus for Use in the Presence of Combustible Dust - Part 3: Classification of Areas where Combustible Dusts are or May be Present*. In comparison with GB/T 12476.3-2017, the main technical changes are as follows:

---The density and concentration of dust cloud are added as factors in the consideration of release (see 4.1);

---The requirements for personnel capabilities are added (see 4.3);

---The requirements that consider the rise of dust layers to form dust clouds are added (see Chapter 7);

---EPL is added to the document (see 8.1).

This document adopts the re-drafting method in the modification and adoption of IEC 60079-10-2:2015 *Explosive Atmospheres - Part 10-2: Classification of Areas - Explosive Dust Atmospheres*.

This document makes the following structural adjustment:

---Appendix A corresponds to Appendix C of IEC 60079-10-2:2015; Appendix B corresponds to Appendix A of IEC 60079-10-2:2015; Appendix C corresponds to Appendix B of IEC 60079-10-2:2015.

The technical differences between this document and IEC 60079-10-2:2015, and the causes for the differences are as follows:

---In terms of Normative References, this document makes certain adjustments with technical differences, so as to adapt to the technical conditions of China. The adjustments are intensively reflected in Chapter 2 “Normative References”. See the specific adjustments below:

- GB/T 3836.1, which modifies and adopts international standard, is used to replace IEC 60079-0 (see Chapter 3);
- IEC 60079-10-1 and ISO/IEC 80079-20-2 are deleted; the corresponding GB 3836.14 and GB/T 3836.12 are moved to Bibliography.

This document makes the following editorial modifications:

---In order to be consistent with the existing standard series, the title of this document is modified into *Explosive Atmospheres - Part 35: Classification of Areas for Explosive Dust Atmospheres*;

---The terminological databases maintained by ISO and IEC are added to Chapter 3;

---The incorrect article No. cited in NOTE 1 of 3.9 is deleted;

---The NOTE regarding personnel capabilities in 4.3 is deleted.

Please be noted that certain content of this document may involve patents. The institution issuing this document does not undertake the responsibility of identifying these patents.

This document was proposed by China Electrical Equipment Industry Association.

This document shall be under the jurisdiction of National Technical Committee 9 on Explosion Protected Electrical Apparatus of Standardization Administration of China (SAC/TC 9).

Explosive Atmospheres - Part 35: Classification of Areas for Explosive Dust Atmospheres

1 Scope

This document specifies the identification and classification of areas where explosive dust atmospheres and possible combustible dust layers are present, so as to appropriately assess the ignition sources appearing in these areas.

In this document, the explosive dust atmospheres and combustible dust layers are differentially treated. Chapter 4 describes the classification of areas for explosive dust clouds, and dust layer is considered as one of the possible release sources. Chapter 7 describes the ignition hazards of dust layers.

This document adopts effective site cleaning based on factory cleaning to prevent the accumulation of dust layers. If effective site cleaning is not carried out, the classification of areas will include the explosive dust clouds that may be formed by the dust layers.

For areas where combustible fibers or combustible flyings may cause hazards, the principle of this document may also be followed.

This document is applicable to areas where hazards may be caused due to the presence of explosive dust atmospheres or combustible dust layers under normal atmospheric conditions (see NOTE 1).

NOTE 1: atmospheric conditions include pressure and temperature changes that are higher or lower than the benchmark: 101.3 kPa and 20 °C, provided that these changes have negligible impact on the explosive characteristics of combustible materials.

This document does not apply to:

---underground mining areas;

---spontaneously combustible materials that do not require atmospheric oxygen for combustion, such as: pyrophoric substances, propellants, pyrotechnics, ammunition, peroxides, oxidants, water-reactive elements or compounds, or other similar materials;

---abnormal catastrophic accidents beyond the scope of this document;

---Hazards caused by toxic gas emitted with dust.

This document does not apply to areas that may be hazardous due to the presence of combustible gases or vapors, but this principle may be used to assess hybrid mixtures

(see also GB 3836.14).

NOTE 2: see Appendix A for supplementary guidance on the hybrid mixtures.

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

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to this document.

GB/T 3836.1 Explosive Atmospheres - Part 1: Equipment - General Requirements (GB/T 3836.1-2021, IEC 60079-0:2017, MOD)

3 Terms and Definitions

What is defined in GB/T 3836.1, and the following terms and definitions are applicable to this document.

ISO and IEC maintain a terminological database for standardization at:

---IEC: http://www.electropedia.org/;

---ISO: http://www.iso.org/obp.

NOTE: other terms and definitions applicable to the explosive atmospheres are shown in GB/T 2900.35.

3.1 Area

Area refers to a three-dimensional area or space.

3.2 Hybrid Mixture

Hybrid mixture refers to a mixture of combustible gas or vapor and combustible dust.

3.3 Dust

Dust is a generic term including combustible dust and combustible flyings.

3.4 Combustible Dust

Combustible dust refers to tiny solid particles (with a nominal size of 500 μm and below) that may form explosive mixtures with the air at standard atmospheric pressure and

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