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Replacing GB 25286.5-2010, GB25286.6-2010, GB 25286.8-2010

Explosive atmospheres – Part 29: Non-electrical equipment for explosive atmospheres – Constructional safety "c", control of ignition source "b", liquid immersion "k"

爆炸性环境　第 29 部分：爆炸性环境用非电气设备结构安全型"c"、控制点燃源型"b"、液浸型"k"

(ISO 80079-37:2016, Explosive atmosphere – Part 37: Non-electrical equipment for explosive atmospheres – Non electrical type of protection constructional safety "c", control of ignition source "b", liquid immersion "k"

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Foreword

This document has been drafted in accordance with the rules given in GB/T 1.1-2020, "Directives for standardization - Part 1: Rules for the structure and drafting of standardizing documents".

This document is part 29 of GB/T 3836 "Explosive atmospheres". The following parts have been released for GB/T 3836:

-- 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 vapour 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 standard replaces GB 25286.5-2010 *Non-electrical equipment for use in potentially explosive atmospheres - Part 5: Protection by constructional safety “c”*, GB 25286.6-2010 *Non-electrical equipment for use in potentially explosive atmospheres - Part 6: Protection by control of ignition source “b”* and *GB 25286.8-2010 Non-electrical equipment for potentially explosive atmospheres - Part 8: Protection by liquid immersion “k”*. This standard integrates the main contents of GB 25286.5-2010, GB 25286.6-2010, and GB 25286.8-2010. Compared with GB 25286.5-2010, GB 25286.6-2010, and GB 25286.8-2010, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

-- Change the application of protection by control of ignition source “b” (see 6.5.3; 8.3 of GB 25286.6-2010);

-- Add the document requirements for constructional safety “c” and protection by control of ignition source “b” (see 9.1, 9.2);

-- Change the marking requirements (see Clause 10; Clause 12 of GB 25286.5-2010, Clause 11 of GB 25286.6-2010, Clause 10 of GB 25286.8-2010).

This standard uses the redrafting method to modify and adopt ISO 80079-37:2016 *Explosive atmospheres - Part 37: Non-electrical equipment for explosive atmospheres - Non-electrical type of protection constructional safety “c”, control of ignition source “b”, liquid immersion “k”*.

The technical differences between this document and ISO 80079-37:2016 and the reasons are as follows:

-- With regard to the normative references, this document makes technical adjustments to adapt to the technical conditions of China. The adjustments are concentrated in Chapter 2 “Normative references”. The specific adjustments are as follows:

- Use GB/T 3766 which modifies and adopts international standards to replace ISO 4413 (see 5.8.5.2);
- Use GB/T 3836.1 which modifies and adopts international standards to replace IEC 60079-0 (see Clause 3);
- Use GB/T 3836.26 which modifies and adopts international standards to replace IECTS60079-32-1 (see 5.13.1);
- Use GB/T 3836.28-2021 which is modified to adopt international standards to replace ISO 80079-36:2016 (see Clause 1);
- Use GB/T 4208 which is equivalent to the international standard to replace IEC 60529 (see 7.3.3);
- Use GB/T 6391 which is equivalent to the international standard to replace ISO 281 (see 5.7.1);
- Use GB/T 7932 which is equivalent to the international standard to replace ISO 4414 (see 5.8.5.3);
- Use GB/T 10715 which modifies and adopts international standards to replace ISO 1813 (see 5.8.2.2);

- Use GB/T 32072 which modifies and adopts international standards to replace ISO 9563 (see 5.8.2.2);
- Delete ISO 19353, and move the corresponding GB/T 23819 to Bibliography;
- Delete EN 13237, and move it to Bibliography;
- Delete EN 13501-1, and move it to Bibliography;

This document makes the following editorial changes:

-- Change the standard name to *Explosive atmospheres - Part 29: Non-electrical equipment for explosive atmospheres - Constructional safety "c", control of ignition source "b", liquid immersion "k"*, to be consistent with the existing standard series;

-- Clarify the scope of application of this standard in Clause 1;

-- Add a note about Appendix A in 3.1;

-- Modify the note about documents in 5.1;

-- Modify the Bibliography.

Please note that some of the contents of this document may involve patents. The issuing organization of this document is not responsible for identifying patents.

This standard 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).

The drafting organizations of this document: Nanyang Explosion-proof Electrical Research Institute, CenerTech Tianjin Chemical Research and Design Institute Co., Ltd., Shanghai Inspection and Testing Institute of Instruments and Automation Systems Co., Ltd., HERMETIC-Pumps Dalian Co., Ltd., Hangcha Group Co., Ltd., Hengyang Heli Industry Vehicle Co., Ltd., Jiangyin Furen High Tech Co., Ltd., Wolong Electric Nanyang Explosion Protection Group Co., Ltd., CZ Electric Co., Ltd.

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Explosive atmospheres – Part 29: Non-electrical equipment for explosive atmospheres – Constructional safety “c”, control of ignition source “b”, liquid immersion “k”

1 Scope

This document specifies the requirements for the design and construction of nonelectrical equipment, intended for use in explosive atmospheres, protected by the types of protection constructional safety “c”, control of ignition source “b” and liquid immersion “k”.

This document applies to Ex equipment, Ex components, protection systems, devices and assemblies of these products, protected by the types of protection constructional safety “c”, control of ignition source “b” and liquid immersion “k”.

This document supplements and modifies the requirements in GB/T 3836.28-2021. Where a requirement of this standard conflicts with the requirement of GB/T 3836.28-2021, the requirement of this standard takes precedence.

Types of Protection “c”, “k” and “b” are not applicable for Group I, EPL Ma without additional protective precautions.

The types of ignition protection described in the standard can be used either on their own or in combination with each other to meet the requirements for equipment of Group I, Group II, and Group III depending on the ignition hazard assessment in GB/T 3836.28-2021.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 3766, Hydraulic fluid power - General rules and safety requirements for systems and their components (GB/T 3766-2015, ISO 4413:2010, MOD)

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

GB/T 3836.26, Explosive atmospheres- Part 26: Electrostatic hazards - Guidance (GB/T 3836.26-2019, IEC TS 60079-32-1:2013, MOD)

GB/T 3836.28-2021, Explosive atmospheres - Part 28: Non-electrical equipment for explosive atmospheres - Basic method and requirements (ISO 80079-36:2016, MOD)

GB/T 4208, Degrees of protection provided by enclosure (IP code) (GB/T 4208-2017, IEC 60529:2013, IDT)

GB/T 6391, Rolling bearings - Dynamic load ratings and rating life (GB/T 6391-2010, ISO 281:2007, IDT)

GB/T 7932, Pneumatic fluid power - General rules and safety requirements for systems and their components (GB/T 7932-2017, ISO 4414:2010, IDT)

GB/T 10715, Belt drives - V-ribbed belts, joined V-belts and V-belts including wide section belts and hexagonal belts - Electrical conductivity of antistatic belts: Characteristics and methods of test (GB/T 10715-2021, ISO 1813:2014, MOD)

GB/T 32072, Belt drives - Electrical conductivity of antistatic synchronous belts - Characteristics and test method (GB/T 32072-2015, ISO 9563:1990, MOD)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in GB/T 3836.28-2021, GB/T 3836.1 and the following apply.

3.1

constructional safety “c”

ignition protection where constructional measures are applied so as to protect against the possibility of ignition from hot surfaces, sparks and adiabatic compression generated by moving parts

NOTE See Appendix A for application examples.

3.2

mechanical generated sparks

sparks produced by mechanical impact or friction burning particles, as well as showers of particles, produced by impact or friction between two solid materials

3.3

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