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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 3836.24-2017

**Explosive atmospheres -- Part 24: Equipment protection by
special protection 's'**

爆炸性环境 第24部分：由特殊型“s”保护的設備

(English Translation)

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Foreword

Explosive atmospheres is divided into several 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 vapour classification - Test methods and data;
- 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 19: Fieldbus intrinsically safe concept (FISCO);
- 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". ...

This Part is Part 24 of Explosive atmospheres.

This Part was drafted in accordance with the rules given in GB/T 1.1-2009.

This Part uses the re-drafting method to modify and adopt IEC 60079-33:2012 Explosive atmospheres - Part 33: Equipment protection by special protection "s".

The main technical differences between this Part and IEC 60079-33:2012 and their reasons are as follows.

- With regard to the normative references, this Part makes technical adjustments to adapt to the technical conditions of China. The adjustments are concentrated in Clause 2 "Normative references". The specific adjustments are as follows.
- Use GB/T 3836 (all parts) to replace IEC 60079 (all parts), GB/T 20438 (all parts) to

replace IEC 61508 (all parts), GB/T 21109 (all parts) to replace IEC 61511 (all parts), where the consistency between the parts is shown in Annex C;

- Use GB 3836.1 to replace IEC 60079-0, GB/T 20438.1 to replace IEC 61508-1, GB/T 16855.1 to replace ISO 13849-1, GB/T 16855.2 to replace ISO 13849-2, GB/T 20936.1 to replace IEC 60079-29-1, GB/T 20936.2 to replace IEC 60079-29-2, and GB 28526 to replace IEC 62061;
- Add references to GB 12476 (all parts) and GB/T 20936.3;
- Add the definition of "safety-related devices" in 3.5 to correspond to the "safety-related devices" in the main text;
- Change "independent inspector" to "independent verifier", and exclude person to conform to the actual situation of explosion-proof equipment inspection in China. This Part makes the following editorial changes.
- Modify the standard's name;
- Add the description of the standards for explosion-proof electrical equipment for use in combustible dust environments (see Note 3 in Clause 1);
- Delete the example of the submerged pump in 10.2.4 and 10.3;
- Add a description of the degree of consistency between the various parts of the normative references and the various parts of the international standards (see Annex C).

1 Scope

This part of Explosive atmospheres gives the specific methodology for the assessment and testing, and requirements for marking of electrical equipment, parts of electrical equipment and Ex components with special protection "s".

This Part applies to.

- electrical equipment employing a method of protection not covered by any existing standard in the GB/T 3836 series;
- electrical equipment employing one or more recognized types of protection where the design and construction is not fully compliant with the standard for the type of protection;
- electrical equipment where the intended use is outside the parameters of the scope of the standard for the type of protection.

This Part is not intended for equipment that is covered by the scope of other GB/T 3836 equipment standards unless.

- it is clearly demonstrated that compliance with the type of protection is not feasible;
- additional measures are applied to establish an equivalent equipment protection level.

This Part for special protection "s" is applicable to Group I, Group II and Group III and for equipment protection levels Ma, Mb, Ga, Gb, Gc, Da, Db and Dc, as defined in GB 3836.1.

Certain specific guidance for assessment and testing are provided in the annexes to this Part.

This Part supplements and modifies the general requirements of GB 3836.1.

Note 1: This Part may be used where equipment requires a higher EPL than the underlying protection techniques provide. Additional control measures or additional design and test requirements would be applied.

- either, in the event of failure of one means of protection, at least an independent second means provides the requisite level of protection; or - the requisite level of protection is ensured in the event of two expected malfunctions or a rare malfunction.

Equipment designed to be opened for short periods of time, e.g., during maintenance, shall be designed such that the equipment is fitted with an appropriate additional interlocking system to reduce the likelihood of opening whilst energized.

Where it is not possible to de-energize equipment, a warning label shall be fixed to the equipment to advise against opening with an explosive gas atmosphere present.

For equipment with EPL Ga, the proposed justification shall be submitted by the manufacturer, according to 4.4, to the independent verifier (1) who is responsible for confirming the manufacturer's proposal. The resulting proposed schedule of assessment and test requirements shall be submitted by independent verifier (1) to independent verifier (2) and independent verifier (3) for agreement. Once agreement has been reached the independent verifier (1) shall perform the assessment and tests. Any variation to the original schedule of assessment and tests shall be submitted to the independent verifiers (2) and (3) for further agreement.

Prior to issue, the final assessment and test report shall be submitted to the independent verifier (2) and independent verifier (3) for final confirmation.

7.4 Equipment with EPL Gb

Equipment shall be designed and constructed so as to prevent ignition sources arising, even in the event of frequently occurring disturbances or equipment operating malfunctions, which normally have to be taken into account.

Equipment designed to be opened for short periods of time, e.g., during maintenance, shall be such that.

- equipment shall be fitted with appropriate additional interlocking systems to reduce the likelihood of opening whilst energized; or - where it is not possible to de-energize equipment, a warning label shall be fixed to the equipment to advise against opening with