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

GB/T 3836.12-2019

**Explosive atmospheres -- Part 12: Material characteristics for
combustible dusts -- Test methods**

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Foreword

The Explosive Environment is divided into several sections.

- Part 1. General requirements for equipment;
- Part 2. Equipment protected by flameproof enclosure "d";
- Part 3. Equipment protected by increased safety "e";
- Part 4. Equipment protected by intrinsically safe "i";
- Part 5. Equipment protected by positive pressure housing "p";
- Part 6. Equipment protected by liquid immersion "o";
- Part 7. Equipment protected by sand-filled "q";
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- Part 9. Equipment protected by potting type "m";
- Part 11. Classification test methods and data of gas and vapor substance characteristics;
- Part 12. Test method for characteristics of flammable dust substances;
- Part 13. Equipment repair, overhaul, repair and transformation;
- Part 14. Classification of places for explosive gas environments;
- Part 15. Design, selection and installation of electrical devices;
- Part 16. Inspection and maintenance of electrical installations;
- Part 17. Equipment protected by positive pressure room "p" and artificially ventilated room "v";
- Part 18. Intrinsically Safe Electrical System;
- Part 19. Fieldbus Intrinsic Safety Concept (FISCO);

- Part 20. Equipment with protection level (EPL) of Ga level;
- Part 21. Application of equipment production quality system;
- Part 22. Protective measures for optical radiation equipment and transmission systems;
- Part 23. Class I EPLMa equipment for gas and/or coal dust environments;
- Part 24. Equipment protected by special type "s";
- Part 25. Process sealing requirements between flammable process fluids and electrical systems;
- Part 26. Guidelines for electrostatic hazards;
- Part 27. Static electricity hazard test;

This section is Part 12 of "Explosive Environments".

This section is drafted in accordance with the rules given in GB/T 1.1-2009.

This section replaces GB/T 12476.8-2010 "Electrical equipment for flammable dust environment. Part 8. Test methods to determine the minimum dust

Method of ignition temperature ", GB/T 12476.9-2010" Electrical equipment for flammable dust environment-Part 9. Test method-Resistance of dust layer

Method for determination of the rate "and GB/T 12476.10-2010" Electrical equipment for flammable dust environment Part 10. Test methods

Determination of minimum ignition energy of gas mixtures. This section integrates GB/T 12476.8-2010, GB/T 12476.9-2010 and

The content of GB/T 12476.10-2010 is the same as GB/T 12476.8-2010, GB/T 12476.9-2010 and GB/T 12476.10-2010

The main technical changes are as follows.

- Modified the requirements for dust samples (see Chapter 4, 4.1 and 5.1 of GB/T 12476.9-2010, GB/T 12476.9-2010 Chapter 5, GB/T 12476.10-2010 Chapter 5);
- Increased the determination of flammable dust and flammable fly flocs (see Chapter 5);
- Added procedures for determining the characteristics of flammable dust or flammable fly flocs (see Chapter 6);
- Modified the test method of minimum ignition temperature of dust cloud (see 8.1, Chapter 5 of GB/T 12476.8-2010);
- Modified the test method for the minimum ignition temperature of the dust layer (see 8.2, Chapter 4 of GB/T 12476.8-2010);

--- Method for determining the minimum ignition energy of dust/air mixture

chapter);

--- Modified the dust resistivity test (see 8.4, Chapters 4, 6 and 7 of GB/T 12476.9-2010);

--- Increased surface temperature distribution measurement of hot metal plates (see Appendix A);

--- Added vertical tube (improved Hartmann tube) equipment (see Appendix D).

This section uses the translation method equivalent to ISO /IEC 80079-20-2..2016

"Explosive atmospheres Part 20-2. Material properties may be

Test method for flammable dust.

The following editorial changes have been made in this section.

--- Modified the standard name;

--- Include the contents of the errata ISO /IEC 80079-20-2..2016/COR1..2017;

--- Added the network address of GESTIS-DUST-EX in Appendix G for easy use.

This section is proposed by China Electrical Equipment Industry Association.

This part is under the jurisdiction of the National Explosion-proof Electrical Equipment Standardization Technical Committee (SAC/TC9).

This section was drafted. Nanyang Explosion-proof Electric Research Institute Co., Ltd., National Energy Investment Group Co., Ltd., National Explosion-proof Electric

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1 Scope

This section of the Explosive Environment specifies test methods for the determination of combustible dust and combustible dust layers for the presence of such substances

In order to correctly select and install electrical equipment and non-electrical equipment (mechanical equipment, etc.) for flammable dust environments.

The measured flammable dust characteristics apply to the following environmental conditions.

--- Temperature. -20 degrees C ~ 60 degrees C;

--- Pressure. 80kPa ~ 110kPa;

--- Normal oxygen content (volume ratio) in the air. usually 21%.

The test methods specified in this section do not apply to.

--- Known explosive substances, propellants (such as gunpowder, explosives), or substances or mixtures with similar characteristics under certain conditions; or

--- Explosive substances or propellants that can be burned without the need for atmospheric oxygen.

2 Normative references

no.

3 terms and definitions

The following terms and definitions apply to this document.

3.1

Combustible dust

Tiny solids with a nominal size of 500 μm and below that may form explosive mixtures with air at standard atmospheric pressure and temperature

Particles.

Note 1. Including dust and particles specified in HJ492.

Note 2. The term "solid particles" refers to solid particles, but does not exclude hollow particles.

3.1.1

Conductive dust

Combustible dust with a resistivity of $1 \times 10^3 \Omega \cdot \text{m}$ or less.

Note. Metal dust is treated as conductive dust, because it cannot always rely on surface oxidation to ensure the resistivity is greater than $1 \times 10^3 \Omega \cdot \text{m}$.

3.1.2

Non-conductive dust

Flammable dust with resistivity greater than $1 \times 10^3 \Omega \cdot \text{m}$.

3.2

Combustible flyings