



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

GB/T 3836.9-2021

**Explosive atmospheres - Part 9: Equipment protection by
encapsulation 'm'**

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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 9 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 3836.9-2014 Explosive Atmospheres -

Part 9.Equipment Protection by Type of Protection "m" and GB 12476.6-2010

Electrical Apparatus for Use in the Presence of Combustible Dust - Part 6.Protection

by Encapsulation "mD". This document focuses on GB 3836.9-2014 and integrates the

main content of GB 12476.6-2010.In comparison with GB 3836.9-2014, apart from

structural adjustments and editorial modifications, the main technical changes are as follows.

---Additional requirements for protection level "mb" are added (see 4.2);

---The requirements for thermal conductivity are added to the specification (see 5.2);

---The option of determining reliable components and isolation compounds in a fault is added (see 7.2);

---The dimensional drawing of compound thickness is modified (see 7.4.1; 7.4.1 of Version 2014);

---Standard options for multi-layer printed circuit boards with rigid through-connections are added (see 7.4.3.1);

---Additional requirements for batteries are modified and added (see 7.8.3; 7.8.3 of Version 2014);

---The requirements for 2 protective devices with protection level "ma" are added (see 7.9.2);

---The requirements for 2 thermal protective devices with protection level "mb" are added (see 7.9.3);

---The restriction of two-thirds of the rated voltage of the resettable thermal

protective device with switching contacts is deleted (see 7.9.3 of Version 2014);

---The requirements for the determination of the maximum surface temperature of protection level "Da" are added (see 8.2.2);

---The reference service temperature of the thermal endurance test is modified (see 8.2.3.1; 8.2.3.1 of Version 2014);

---The option of type test of dielectric strength is added (see 8.2.4.1);

---An alternative method for the pressure test of equipment with protection level "mb" is added (see 8.2.6);

---The requirement for the number of samples for sealing test with built-in protective devices and the method of reducing samples are added (see 8.2.8);

---Different situations of routine dielectric strength test are added (see 9.2);

---The requirements for the dielectric strength test between the circuit and the environment are added (see Appendix C).

This document adopts the re-drafting method in the modification and adoption of IEC 60079-18:2014 Explosive Atmospheres - Part 18: Equipment Protection by Encapsulation "m".

The technical differences between this document and IEC 60079-18:2014, 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 1408.1, which equivalently adopts international standard, is used to replace IEC 60243-1 (see 5.2);

? GB/T 3836.1, which modifies and adopts international standard, is used to replace IEC 60079-0 (see Chapter 1);

? GB/T 3836.3, which modifies and adopts international standard, is used to replace IEC 60079-7 (see 7.2.2);