NATIONAL STANDARD OF THE

PEOPLE'S REPUBLIC OF CHINA

GB/T 3836.4-2021

Explosive atmospheres - Part 4: Equipment protection by intrinsic safety 'i'

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Table of Contents

Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 Directives for Standardization - Part 1.Rules for the Structure and Drafting of Standardizing Documents.

This Document is Part 4 of GB/T 3836 Explosive Atmospheres. GB/T 3836 has published the following parts.

--- Part 1.Equipment - General Requirements;

--- Part 2.Equipment Protection by Flameproof Enclosure "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 Document replaced GB 3836.4-2010 Explosive Atmospheres - Part 4.Equipment

Protection by Intrinsic Safety "i", GB 3836.19-2010 Explosive Atmospheres - Part 19. Fieldbus Intrinsically Safe Concept (FISCO), and GB 12476.4-2010 Electrical Apparatus for Use in the Presence of Combustible Dust - Part 4.Protection by Intrinsic Safety "iD". Mainly based on GB 3836.4-2010, this Document integrated the major contents of GB 3836.19-2010 and GB 12476.4-2010.Compared with GB 3836.4-2010, this Documents had the major technical changes as follows besides the structural adjustments and editorial modifications.

--- Integrate the requirements of equipment for combustible dust environment in GB 12476.4-2010;

--- Integrate the requirements of FISCO equipment in GB 3836.19-2010 (see Annex Explosive Atmospheres - Part 4.

Equipment Protection by Intrinsic Safety "i"

1 Scope

This document specifies the construction and testing of intrinsically safe apparatus intended for use in an explosive atmosphere and for associated apparatus, which is intended for connection to intrinsically safe circuits which enter such atmospheres. This type of protection is applicable to electrical equipment in which the electrical circuits themselves are incapable of causing an explosion in the surrounding explosive atmospheres.

2 Normative References

The provisions in following documents become the provisions of this Document through reference in this Document. For the dated documents, only the versions with the dates indicated are applicable to this Document; for the undated documents, only the latest version (including all the amendments) is applicable to this Document.

GB/T 3836.1-2021 Explosive atmospheres - Part 1.Equipment - General requirements (IEC 60079-0.2017, MOD)

GB/T 3836.3 Explosive Atmospheres - Part 3.Equipment Protection by Increased Safety "e" (GB/T 3836.3-2021, IEC 60079-7.2015, MOD)

GB/T 3836.18 Explosive atmospheres - Part 18.Intrinsically safe electrical systems (GB/T 3836.18-2017, IEC 60079-25.2010, MOD)

GB/T 4207 Method for the determination of the proof and the comparative tracking indices of solid insulating materials (GB/T 4207-2012, IEC 60112.2009, IDT)

GB/T 4208 Degrees of Protection Provided by Enclosure (IP Code) (GB/T 4208-2017, IEC 60529.2013, IDT)

GB/T 6109.2 Enamelled round winding wire - Part 2.Polyester enamelled round copper wire class 155 (GB/T 6109.2-2008, IEC 60317-3.2004, IDT)

GB/T 6109.5 Enamelled round winding wire - Part 5.Polyesterimide enamelled round copper wire class 180 (GB/T 6109.5-2008, IEC 60317-8.1997, IDT)

GB/T 6109.6 Enamelled round winding wire - Part 6.Polyimide enamelled round copper wire class 220 (GB/T 6109.6-2008, IEC 60317-7.1997, IDT)

GB/T 6109.20 Enamelled round winding wire - Part 20.Polyester on polyesterimide overcoated with polyamide-imide enamelled round copper wire class 200 (GB/T 6109.20-2008, IEC 60317-13.1997, IDT)

GB/T 7957 General Requirements for Construction, Performance and Explosion Protected Testing of Caplights for Use in Mines Susceptible to Firedamp (GB/T 7957-2017, IEC 60079-35-1.2011, IEC 60079-35-2.2011, NEQ)

GB/T 9364 (all parts) Miniature fuses [IEC 60127 (all parts)]

GB/T 11021 Electrical insulation -Thermal evaluation and designation (GB/T 11021-2014, IEC 60085.2007, IDT)

GB/T 16657.2 Industrial communication networks - Fieldbus specifications - Part

2 Physical layer specification and service definition (GB/T 16657.2-2008, IEC

61158-2.2007, IDT)

GB/T 16935.1 Insulation Coordination for Equipment within Low-Voltage Systems - Part 1.Principles Requirements and Tests (GB/T 16935.1-2008, IEC 60664-1.2007, IDT)