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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 15065-2026

Replacing GB/T 15065-2009

Polyethylene compounds for wires and cables

电线电缆用聚乙烯塑料

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Table of Contents

Foreword

This document was issued on 30 July 2026 by the State Administration for Market Regulation; Standardization Administration of the PRC and takes effect on 1 February 2027.

It is a GB/T standard: recommended rather than compulsory, but it is the text a Chinese reviewer applies.

It is classified under ICS 83.080.01 and Chinese classification K 15.

The document runs to 19 pages. The identification, the dates, the classification and the table of contents on this page are taken from the cover and the printed contents of the standard itself.

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

This document replaces GB/T 15065-2009 "Black polyethylene compounds for wires and cables". Compared with the 2009 edition, apart from structural adjustments and editorial changes, the main technical changes are as follows:

-- the field of application has been changed (see Clause 1; Clause 1 of the 2009 edition);

-- a clause of terms and definitions has been added (see Clause 3);

-- the specifications have been deleted (see 3.1 of the 2009 edition);

-- the classification of polyethylene cable compounds has been changed (see 4.1; 3.2 of the 2009 edition);

-- a designation system for polyethylene cable compounds has been added (see 4.2);

-- the fields of application corresponding to the different types of polyethylene cable compound have been changed (see 4.3; 3.2 of the 2009 edition);

-- the appearance requirements have been changed (see 5.1; 4.1 of the 2009 edition);

-- the performance requirements for the different types of polyethylene cable compound have been changed (see 5.2; 4.2 of the 2009 edition);

-- the requirement and test method for the low temperature elongation at break of black high density polyethylene sheathing and insulating compounds have been deleted (see 4.2 and 5.2.11 of the 2009 edition);

-- conditioning of the test pieces and the standard atmosphere for testing have been added (see 6.1);

-- the test method for appearance has been changed (see 6.2; 5.1 of the 2009 edition);

-- the method of preparing the test pieces has been changed (see 6.3; 5.2.1 of the 2009 edition);

-- the description of the melt mass-flow rate test method has been changed (see 6.4; 5.2.2 of the 2009 edition);

-- the description of the density test method has been changed (see 6.5; 5.2.3 of the 2009 edition);

-- the test methods for tensile strength, tensile yield stress and tensile strain at break have been changed (see 6.6; 5.2.4 of the 2009 edition);

-- the test method for the low temperature impact brittleness temperature has been changed (see 6.7; 5.2.5 of the 2009 edition);

-- the description of the environmental stress cracking test method has been changed (see 6.8; 5.2.12 of the 2009 edition);

-- the conditions of the hot air ageing test have been changed (see 6.10; 5.2.10 of the 2009 edition);

-- test methods have been added for hot set, thermal shock resistance, thermal deformation, gel content, resistance to hot water immersion, ozone resistance, oxygen index and the acidity of the gases released on burning, that is HCl and HBr content, HF content, pH and conductivity (see 6.11 and 6.16 onwards).

This document was first issued in 1994 as GB/T 15065-1994 and first revised in 2009; the present edition is the second revision.

The drafting organisations include Changshu Zhonglian Photoelectric New Material, Tianshui Railway Hongda Industrial, Hebei Huatong Wires & Cables Group, Jiangsu Rongyi Cable, Shanghai Cable Testing, Hangzhou Meilin New Material Technology and the China

Plastics Processing Industry Association, together with some thirty further cable and compound makers.

1 Scope

GB/T 15065 is the Chinese material standard for the polyethylene compounds used to insulate and sheathe wire and cable. It specifies the classification, the designation and the fields of application, the requirements, the inspection rules and the marking, packaging, transport and storage, and describes the corresponding test methods. It applies to compounds made from polyethylene resin with antioxidants and other additives, mixed, plasticised and pelletised. The classification is the heart of it: insulation or sheathing, then by density, by whether the compound is crosslinked and by which route, irradiation, silane or peroxide, and by whether it is flame retardant and halogen free, the choice that decides how a cable behaves in a fire in an enclosed space. The 2026 edition replaces GB/T 15065-2009 and widens the scope beyond black compounds, adds a formal designation system, and brings in test methods for hot set, thermal shock, gel content, ozone resistance, oxygen index and the acidity of the gases released on burning.

2 Normative references

The contents of the following documents constitute indispensable provisions of this document through normative reference in the text. For dated references, only the edition corresponding to that date applies. For undated references, the latest edition, including all amendments, applies.

GB/T 1033.1-2008 Determination of the density of non-cellular plastics - Part 1; GB/T 1040.3 Determination of tensile properties - Part 3: Test conditions for films and sheets; GB/T 1408.1 Test methods for electric strength - Part 1: Tests at power frequencies; GB/T 1409 Determination of permittivity and dielectric dissipation factor.

GB/T 1633-2005 Determination of Vicat softening temperature (VST); GB/T 2035 Plastics - Vocabulary; GB/T 2406.2 Determination of burning behaviour by oxygen index - Part 2: Ambient-temperature test; GB/T 2918 Standard atmospheres for conditioning and testing.

GB/T 2951.12, GB/T 2951.21, GB/T 2951.41 and GB/T 2951.42-2008 Common test methods for insulating and sheathing materials of electric and optical cables: thermal ageing; ozone resistance, hot set and mineral oil immersion; environmental stress cracking, melt index, carbon black and mineral filler content, thermogravimetric analysis and carbon black dispersion; tensile strength and elongation at break after high temperature treatment, wrapping tests, mass increase, long-term thermal stability and copper-catalysed oxidative degradation.

GB/T 3682.1-2018 Determination of the melt mass-flow rate and melt volume-flow rate of thermoplastics - Part 1; GB/T 5470 Determination of brittleness temperature by impact;

GB/T 12527-2008 Aerial insulated cables of rated voltages up to and including 1 kV; GB/T 18251-2019 Determination of the dispersion of pigments or carbon black in polyolefin pipes, fittings and compounds.

GB/T 31838.2 Dielectric and resistive properties - Part 2: Resistive properties (DC methods); GB/T 32129-2015 Halogen-free low smoke flame-retardant cable compounds; JB/T 10437-2024 Crosslinkable polyethylene insulation compounds for wires and cables; YD/T 3832-2021 Flame-retardant polyethylene materials for telecommunication cables and optical cables.

3 Terms and definitions

The terms and definitions given in GB/T 2035 apply to this document.

4 Classification, designation and fields of application

4.1 Classification

Polyethylene cable compounds are divided by use into insulating compounds and sheathing compounds.

The insulating compounds comprise linear low density polyethylene insulation, medium density polyethylene insulation, high density polyethylene insulation, halogen-free flame-retardant thermoplastic polyethylene insulation, halogenated flame-retardant thermoplastic polyethylene insulation, irradiation-crosslinked polyethylene insulation, silane-crosslinked polyethylene insulation, peroxide-crosslinked polyethylene insulation, halogen-free flame-retardant crosslinked polyethylene insulation and halogenated flame-retardant crosslinked polyethylene insulation.

The sheathing compounds comprise linear low density polyethylene sheathing, medium density polyethylene sheathing, high density polyethylene sheathing, halogen-free flame-retardant thermoplastic polyethylene sheathing and halogenated flame-retardant thermoplastic polyethylene sheathing.

4.2 Designation

The codes used for polyethylene cable compounds and their meanings are as follows: J, insulating compound; H, sheathing compound; LL, linear low density; M, medium density; G, high density; Y, thermoplastic; YJ, crosslinked; YJF, irradiation-crosslinked; YJG, silane-crosslinked; YJY, peroxide-crosslinked; WDZ, halogen-free flame retardant; ZR, halogenated flame retardant.

The designation is built up as follows: the polyethylene code PE; then J for an insulating compound or H for a sheathing compound; then the type code, that is LL, M or G for density, Y for thermoplastic, YJ, YJF, YJG or YJY for the crosslinking route, and WDZ or ZR where the compound is flame retardant.