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

GB/T 13663.1-2017

**Polyethylene (PE) piping systems for water supply -- Part 1:
General**

(English Translation)

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Foreword

GB/T 13663 "water supply polyethylene (PE) pipe system" is divided into five parts.

- Part 1. General;
- Part 2. Pipe;
- Part 3. Pipe fittings;
- Part 4. Valves;
- Part 5. System Suitability.

This section GB/T 13663 Part 1.

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

This section GB/T 13663 and Part 2 jointly replace GB/T 13663-2000 "polyethylene pipe (PE) for water supply" and GB/T 13663-2000 compared to the main technical changes as follows.

--- This part of the material instead of GB/T 13663-2000 performance requirements, and with reference to the content of ISO 4427-1.:2007 drafting phase Related content

- Increase the "maximum working pressure of not more than 2.0MPa and reference working temperature of 20 °C" requirements (Chapter 1 of this section);
- Added "terms and definitions, symbols, abbreviations" (Chapter 3 of this section);
- Added "mixed ingredients of the formula or production process changes, should be provided in accordance with this section new certificate of competency" requirements (This section 4.1);
- Modify the grading and naming of polyethylene compound ingredients, delete PE63 material classification and naming, add "mixed the long-term hydrostatic strength curve at 80 °C does not allow inflection point before 5000h ($t < 5000h$) (part 4.3);
- Deleted the design stress of PE63 material (part 4.4);
- Modification of the properties of polyethylene compounds to be measured in the form of pellets and pipe in the determination of two parts, of which the granular material Determination of the mixed ingredients increased performance density, volatile content, moisture content, carbon black dispersion/pigment dispersion, the appearance of grade, gray Points, tensile nominal strain and yield stress requirements; measured in the form of pipe mixed material properties for the new requirements added, increased Requirements for butt fusion - bonding tensile strength, weatherability, resistance to rapid crack propagation (S4) and resistance to slow crack growth (part 4.5);
- Polyethylene mixed material oxidation induction time of the test parameters and requirements from "200 °C, $\geq 20min$ " to "210 °C, $\geq 20min$ " (part 4.5);
- Increasing the "black mixture of carbon black in the average (initial) particle size range of 10nm ~ 25nm" requirements (Section 4.5);
- Added "welding compatibility of polyethylene compounds" requirements (Section 4.6);
- Added "health requirements" (Chapter 5 of this section);
- Increasing the informative appendix "This part of ISO 4427-1.:2007 compared to the structural changes" (Appendix A of this section);
- Increasing the informative appendix "This part and ISO 4427-1.:2007 technical differences and their causes" (Part B of this Appendix);
- Polyethylene pipe system temperature stress reduction factor adjusted to Appendix C, an increase of 25 °C and 35 °C pressure reduction system and "When the temperature is less than 20 °C, the pressure reduction factor f_T is 1.0" requirements (Appendix C of this section);
- Increasing the informative appendix "mixed ingredients change" (Part D of this section);
- Added a normative appendix "Determination of volatile content" (Appendix E of this section);

--- Added a normative appendix "weatherability" (Appendix F of this section).

This section uses the redrafted law to amend the use of ISO 4427-1.:2007 "plastic pipe system for water supply polyethylene (PE) pipe and pipe Part 1. General Principles.

This part of ISO 4427-1.:2007 compared to the structural adjustment. Appendix A lists the clauses and sections of this section ISO 4427-1.:2007 reg number control list.

This section compared with ISO 4427-1.:2007 there are technical differences. Relevant differences have been incorporated into the text and in the terms that they cover the margins are marked with a vertical single line (|). A list of these technical differences and their causes is given in Appendix B.

Please note that some of this document may be patentable. The issuing agencies of this document do not bear the responsibility of identifying these patents.

This part is proposed by China National Light Industry Council.

This part of the National Plastics Standardization Technical Committee (SAC/TC48) centralized.

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1 Scope

This section GB/T 13663 specifies the terms and definitions, symbols, abbreviations, materials and health of polyethylene (PE) piping systems for water supply Health requirements.

This section GB/T 13663 and other parts together, apply to the water temperature is not greater than 40 °C, the maximum working pressure (MOP) is not greater than 2.0MPa, the general purpose of pressure water and drinking water distribution of polyethylene pipe system and its components.

Note 1: Reference working temperature is 20 °C. Operating temperature at 0 °C ~ 40 °C pressure reduction coefficient, see Appendix C.

Note 2: It is the purchaser's responsibility to make the proper use of the products specified in this section, in accordance with the requirements of their particular application, in accordance with the relevant regulations, standards or codes.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version applies to this article Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 321 priority number and priority number (GB/T 321-2005, ISO 3. 1973, IDT) GB/T 1033.1-2008 Plastics - Determination of density of non-foamed plastics - Part 1. Immersion method, liquid pyknometer method and titration method (ISO 1183-1.:2004, MOD) GB/T 1033.2-2010 Plastics - Determination of density of non-foamed plastics - Part 2. Density gradient column method (ISO 1183-2.

2004, MOD)

GB/T 1040.2-2006 Plastics - Determination of tensile properties - Part 2. Test conditions for molding and extrusion of plastics (ISO 527-2.:1993, IDT) GB/T 1845.2-2006 Plastics - Polyethylene (PE) molding and extrusion materials - Part 2. Preparation of test specimens and determination of properties (ISO 1872-2.:1997, MOD) GB/T 3681-2011 plastic natural daylight climate aging glass filtered sunlight weathering and Fresnel mirror acceleration of solar gas Aging exposure test methods (ISO 877.:1994, IDT) GB/T 3682.1 plastic thermoplastics melt mass flow rate (MFR) and melt volume flow rate (MVR) Determination Part 1. Standard methods (ISO 1133.1.:2011, MOD) GB/T 6111-2003 Thermoplastics pipes for fluid transport - Internal pressure resistance test method (ISO 1167.:1996, IDT) GB/T 8804.1-2003 Thermoplastic plastic pipe tensile properties - Part 1. General test methods (ISO 6259-1.

1997, IDT)

GB/T 8804.3-2003 Thermoplastic plastic pipe tensile properties - Part 3. polyolefin pipe (ISO 6259-3.

1997, IDT)

GB/T 9345.1-2008 Determination of plastic ash - Part 1. General method (ISO 3451-1.:1997, IDT) GB/T 13021-1991 Polyethylene pipes and fittings - Determination of carbon black content (thermogravimetric method) (neqISO 6964. 1986) GB/T 17219 drinking water distribution equipment and protective materials safety evaluation criteria GB/T 18251-2000 Polyolefin pipes, fittings and mixed materials Determination of pigment and carbon black dispersion (neqISO /DIS18553..1999) GB/T 18252 plastic pipe system using extrapolation to determine the long-term hydrostatic strength of thermoplastic materials in the form of pipe