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

GB/T 28799.1-2012

**Plastics piping systems for hot and cold water installations --
Polyethylene of raised temperature resistance (PE-RT) -- Part 1:
General**

(English Translation)

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1 Scope

This part of GB/T 28799 specifies the terms and definitions, symbols and abbreviations, grades of use conditions, materials, hygiene requirements for plastics piping systems for hot and cold water installations - polyethylene of raised temperature resistance (PE-RT).

This part applies to piping systems which are produced by the PE-RT type-I and PE-RT type-II materials.

This part is used in conjunction with GB/T 28799.2 and GB/T 28799.3. It is suitable for hot and cold water piping systems for buildings, including cold and hot water, drinking water, heating systems for civil and industrial buildings.

This part does not apply to fire suppression systems.

2 Normative references

The following documents are essential to the application of 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) are applicable to this standard.

GB/T 6111 Thermoplastics pipes for the conveyance of fluids - Resistance to internal pressure - Test method (ISO 1167)

GB/T 17219 Standard for safety evaluation of equipment and protective materials for drinking water supply and distribution

GB/T 18252 Plastics piping and ducting systems - Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation (ISO 9080)

GB/T 18991 Thermoplastics pipes and fittings for hot and cold water systems (ISO 10508)

GB/T 19278 General terms and their definitions of thermoplastic pipes, of any cross-section of the pipe or fitting's socket by 3.142 (π) and rounded off to 0.1 mm to the great circle.

3.1.1.4

Minimum mean outside diameter $d_{em,min}$

The minimum allowable value of the mean outside diameter.

3.1.1.5

Maximum mean outside diameter $d_{em,max}$

The maximum allowable value of the mean outside diameter.

3.1.1.6

Mean inside diameter of socket d_{sm}

The mean inside diameter of the specified part (middle) of the socket, in mm.

3.1.1.7

Out-of roundness; ovality

On the same cross-section of the tubular portion of the pipe or fitting, the difference between the maximum and minimum measured values of outside diameter, or the difference between the maximum and minimum measured bore.

3.1.1.8

Nominal wall thickness e_n

The specified value of the wall thickness of the pipe, which is equal to the minimum allowable wall thickness $e_{y,min}$, in mm.

3.1.1.9

Wall thickness at any point

3.1.2.1

Design pressure p_D

Design value of the pressure of piping system, in megapascals (MPa).

3.1.2.2

Maximum allowable operating pressure p_{PMS}

The maximum operating pressure of a fluid in a piping system that allows continuous use.

3.1.2.3

Hydrostatic stress

When the water is used as the medium and the pipe is subjected to internal pressure, the ring stress in the pipe wall, which is approximated by the formula (2), in MPa.

Where.

p - The internal pressure of the pipe, in Megapascal (MPa);

dem - The mean outside diameter of the pipe, in millimeters (mm);

emin - The minimum wall thickness of the pipe, in millimeters (mm).

3.1.2.4

Design temperature

TD

The design value of the temperature of water delivery system, in °C.

3.1.2.5

Maximum design temperature

Note: It may refer to Appendix A of GB/T 28799.2-2012.

3.1.3.3

Overall service (design) coefficient

A value greater than 1, the size of which takes into account the conditions of use and the influence of the characteristics of other accessories in the pipeline to the piping system, which is the safety margin of the piping system considered in addition to the factors included in the lower confidence limit.

3.1.3.4

Pipe with barrier layer

Plastic pipe which has a very thin barrier, to prevent or reduce gas or light transmission through the pipe wall, whilst the requirements for design stress are all guaranteed by the body resin (PE-RT).

3.2 Symbol

The following symbols apply to this document.

C. Overall service (design) coefficient (C), dimensionless de. Outside diameter at any point dem. Mean outside diameter dem,min. Minimum mean outside diameter dem,max.

Maximum mean outside diameter dn. Nominal outside diameter dsm. Mean inside diameter of socket e. Wall thickness at any point emax. Maximum wall thickness emin. Minimum wall thickness en. Nominal wall thickness p. Internal hydrostatic pressure pD. Design pressure pPMS. Maximum allowable operating pressure

T. Temperature

Tcold. Cold water temperature

TD. Design temperature

Tmal. Malfunction temperature

Tmax. Maximum design temperature t. Time

sigma. hydrostatic stress

sigmacold. Design stress at 20 °C

sigmaD. Design stress

sigmaDP. Design stress of pipe material

sigmaP. Hydrostatic stress of pipe material

sigmaLPL. Lower confidence limit of the predicted hydrostatic strength

3.3 Abbreviations

The following abbreviations apply to this document.

PE-RT type-I. Type-I heat-resistant polyethylene

PE-RT type-II. Type-II heat-resistant polyethylene

S. Pipe series

4.1 The heat-resistant polyethylene (PE-RT) piping system adopts the

provisions of GB/T 18991. It selects four grades of use conditions (1, 2, 3, 4) from it according to the use conditions, as shown in Table 1. Each grade corresponds specific scope of application and 50-year design service life. In actual use, it shall also consider different design pressures of 0.4 MPa, 0.6 MPa,

0.8 MPa, 1.0 MPa.

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