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

GB/T 21238-2016

Replacing GB/T 21238-2007

**Glass fiber reinforced plastics mortar pipes
(English Translation)**

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 21238-2007 "glass fiber reinforced plastic sand pipe".

The main technical changes of this standard compared with GB/T 21238-2007 are as follows.

- Added "3.2MPa" to the pressure rating (see 4.1.4);
- Increased the stiffness level by "7500N/m²" (see 4.1.5);
- Revised the resin performance requirements, increased the bending strength of the

inner liner resin and the structural layer resin in the fixed length winding process and the continuous winding process Degree and accelerated aging bending strength retention requirements (see 5.2.4 and Appendix A, 2007 edition of 5.2.4);

--- Added "18m" to the effective length and modified the length deviation requirement (see 6.2.2, 6.2.2 of the 2007 edition);

--- Revised the wall thickness requirements (see 6.2.3, 2007 version 6.2.3.);

--- Revised the requirements for the component content of the straight pipe section wall (see 6.5, 6.5 of the 2007 edition);

--- Increased the initial hoop tensile strength requirement of 3.2MPa pressure rating (see 6.6.2);

--- Increased initial axial tensile strength and tensile fracture strain requirements for a pressure rating of 3.2 MPa (see 6.6.3);

--- Cancellation of short-term failure water pressure requirements (see 6.6.5 of the 2007 edition);

--- Increased the initial flexibility requirement of 7500 N/m² stiffness rating (see 6.6.5);

--- Modified the formula for determining the minimum initial hoop bending strength (see 6.6.6, 6.6.7 of the 2007 edition);

--- Cancel the hygienic performance requirements (see Chapter 7 of the 2007 edition);

--- Modified the test method for the component content of the straight pipe section wall (see 7.5, 8.5 of the 2007 edition);

--- Revised the test method for the pressure design basis PDB (see 7.7.1, 8.7.1 of the 2007 edition);

--- Revised the number of samples required for water pressure leak test at the factory inspection (see 8.2.2.3 and 8.2.2.4, 2007 edition 9.2.2.3);

--- Added "factory certificate and technical documents" (see 9.5);

--- Cancel the long-term hydrostatic performance test and determination method (see Appendix B of the 2007 edition);

--- The continuous pressure in the internal pressure and cyclic pressure of the butt joint is changed from "1.5 x PN" to "2.0 x PN" (see D.3.1.1, 2007 edition of D.3.1.1);

---Pre-pressure in the circulating pressure of the flange joint and the continuous pressure in the internal pressure under bending are changed from "1.5 x PN" to "2.0 x PN" (See D.3.2.1, 2007 edition of D.3.2.1).

This standard uses the redrafting method to refer to ISO 10639:2004 "pressure and

non-pressure water supply plastic pipe system glass fiber reinforced thermosetting the plastic (unsaturated polyester resin) tube is compiled and has a degree of consistency with ISO 10639:2004.

This standard was proposed by the China Building Materials Federation.

This standard is under the jurisdiction of the National Fiber Reinforced Plastics Standardization Technical Committee (SAC/TC39).

1 Scope

This standard specifies the terms and definitions, classification and marking, raw materials, requirements, test methods, inspections of glass fiber reinforced plastic sand pipes.

Rules, signs, packaging, transportation, storage, factory certificates and technical documents.

This standard applies to the nominal diameter of 100mm~4000mm, the pressure grade is 0.1MPa~3.2MPa, and the ring stiffness grade is 1250N/m²~10000N/m² Glass fiber reinforced plastic sand for pipeline engineering such as water supply and drainage, water conservancy and farmland irrigation for underground and ground Tube (hereinafter referred to as FRPM tube), the maximum temperature of the medium does not exceed 50 °C.

Non-sanded glass fiber reinforced plastic pipes and nominal diameter, pressure rating and ring stiffness are not within the scope of this standard.

FRPM tubes can also be used with reference to this standard.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

Test method for tensile properties of GB/T 1447 fiber reinforced plastics GB/T 1449 fiber reinforced plastic bending performance test method GB/T 1458 filament wound reinforced plastic ring specimen tensile test method Plastics -- Determination of deformation temperature of plastics - Part 2. Plastics, hard rubber and long fibre reinforced composites material GB/T 2567 resin casting body performance test method GB/T 2573-2008 Test method for aging properties of glass fiber reinforced plastics GB/T 2576 fiber reinforced plastic resin insoluble content test method GB/T 2577 glass fiber reinforced plastic resin content test method GB/T 3854 reinforced plastic Bachel hardness test method Test method for axial tensile properties of GB/T 5349 fiber reinforced thermosetting plastic tubes GB/T 5351 fiber reinforced thermosetting plastic pipe short-time water pressure failure

pressure test method GB/T 5352 fiber reinforced thermosetting plastic tube parallel plate external load performance test method GB/T 8237 liquid unsaturated polyester resin for fiber reinforced plastics GB 13115 Hygienic standard for unsaturated polyester resin and its FRP products for food containers and packaging materials GB/T 18369 glass fiber roving GB/T 32491 Glass fiber reinforced thermosetting resin tube and pipe fittings for long-term hydrostatic test ISO 8483:2003 Glass fibre reinforced thermosetting plastic pipes and fittings - Test method for the design of flanged joints
 [Glass-Reinforced thermosetting plastics (GRP) pipes and fittings - Test method to prove the design of bolted Flange joints] ISO 8533:2003 Test methods for glass-reinforced thermosetting plastic tubes and fittings
 [Glass-reinforced thermosetting plastics (GRP) pipes and fittings - Test method to prove the design of Cemented or wrapped joints] ISO 8639:2000 Glass fiber reinforced thermosetting plastic pipes and fittings - Flexible joints - Test method - s.

Thermosetting plastics (GRP) pipes and fittings - Test methods for leak tightness of flexible joints] ISO 10928:2009 Plastic tube system glass fiber reinforced thermosetting plastic tube and fittings regression analysis method and its application
 [Plastics piping systems - Glass-reinforced thermosetting plastics (GRP) pipes and fittings - Methods for regression analysis and their use]

3 Terms and definitions

The following terms and definitions apply to this document.

Glass fiber and its products are used as reinforcing materials, unsaturated polyester resin as matrix material, inorganic non-metallic such as quartz sand and calcium carbonate.

The material is a filler, and the pipe is made by a fixed length winding process, a centrifugal casting process, and a continuous winding process. Commonly known as glass fiber reinforced plastic sand pipe.

Ring stiffness the load of the tube length per unit length under the action of external pressure under a certain radial deformation. It characterizes that the pipe ring is under the external load Resistance to deformation. Calculated as follows. $S = EI/D^3$, where S is the ring stiffness, usually in N/m² as the unit; EI is the length of the pipe along the axial unit the inner wall has a circumferential bending stiffness and D is the pipe diameter.

Fixed length winding process filament winding process on a pipe mold of a certain length, the pipe is manufactured from the inside to the outside by the spiral winding and/or hoop winding process within the length of the pipe mold.

a production method.

Centrifugal casting process Using a feeder to cast glass fiber, resin, quartz sand, etc. into a rotating mold according to certain requirements, and forming a tube after curing production