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

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**Oriented unplasticized poly(vinyl chloride)(PVC-O) pipes and
joints for the conveyance of water under pressure**

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Table of Contents

foreword

Introduction

1 Scope

2 Normative references

foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part 1. Structure and Drafting Rules of Standardization Documents"

drafted.

This document is prepared with reference to ISO 16422.2014 Specification for Oriented Rigid Polyvinyl Chloride (PVC-O) Pipes and Connectors for Pressure Water Transfer, and

The degree of conformance to ISO 16422.2014 is non-equivalent.

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

Introduction

Thermoplastics undergo molecular orientation slightly above the glass transition temperature, which can improve their physical and mechanical properties.

The molecular orientation of PVC-U pipe material can be induced by different processing techniques. The commonly used processing technology is. extruded thick wall

The billet tube is adjusted at the set temperature, and the hoop and axial orientations are simultaneously activated under controllable conditions.

Cool quickly to ambient temperature.

After molecular orientation, a layered structure of the tube wall is formed, which can resist microscopic defects in the substrate or scratches on the surface of the tube wall.

Brittle failure, so PVC-O pipe has excellent resistance to notch failure, no need for notch resistance test, and no long distance

Risk of rapid crack propagation.

Due to the improvement of hoop strength after molecular orientation, the wall thickness of PVC-O pipes can be reduced, which can save materials and energy. while improving

Impact resistance and fatigue resistance of pipes.

The material grade of PVC-O pipe depends on the mixture/formula and drawing ratio of the blank pipe material used. After the material is graded, the mixing of the blank pipe material

The material/formula and draw ratio are required to be kept stable, so that the allowable change value of the product orientation factor does not exceed the determination when the PVC-O pipe material is graded.

10-5% of the value, see Appendix A for the test method.

Oriented rigid polyvinyl chloride (PVC-O) for pressure water delivery

Tubes and Connections

1 Scope

This document specifies the terms and definitions of oriented rigid polyvinyl chloride (PVC-O) pipes (hereinafter referred to as "pipes") and connectors for pressure water delivery

Definitions, symbols and abbreviations, materials, product classification, requirements, test methods, inspection rules and signs, transportation, storage.

This document applies to water temperature not exceeding 45 degrees C, maximum working pressure (MOP) not exceeding 2.5MPa, underground or above ground (not directly exposed

in sunlight) pipes and fittings for water supply, pressure drainage, sewerage and irrigation systems.

Note. When the working temperature does not exceed 25 degrees C, the reduction coefficient (ft) of temperature to pressure is equal to 1. For working temperature between 25°C and 45°C, see Appendix B.

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

GB/T 1033.1-2008 Determination of the density of non-foamed plastics - Part 1. Impregnation method, pycnometer method and titration method

GB/T 2828.1 Counting Sampling Inspection Procedure Part 1. Lot-by-Lot Inspection

Sampling Plan Retrieved by Acceptance Quality Limit (AQL)

GB/T 2918 Standard Environment for Conditioning and Testing of Plastic Samples

GB/T 5761 Suspension method general-purpose polyvinyl chloride resin

GB/T 6111 Determination of internal pressure resistance of thermoplastic piping systems for fluid transportation

GB/T 8802 Determination of Vicat softening temperature of thermoplastic pipes and fittings

GB/T 8804.2 Determination of Tensile Properties of Thermoplastic Pipes Part 2.Rigid Polyvinyl Chloride (PVC-U), Chlorinated Polyvinyl Chloride (PVC-C) and high impact polyvinyl chloride (PVC-HI) pipes

GB/T 8806 Determination of dimensions of plastic parts of plastic piping systems

GB/T 9647 Determination of Ring Rigidity of Thermoplastic Pipes

GB/T 13295 Ductile iron pipes, fittings and accessories for water and gas

GB/T 13526 Rigid Polyvinyl Chloride (PVC-U) Pipe Dichloromethane Impregnation Test Method

GB/T 14152 Test method for external impact resistance of thermoplastic pipes

GB/T 17219 Safety Performance Evaluation Standard for Drinking Water Transmission and Distribution Equipment and Protective Materials

GB/T 18252 Plastic piping systems Determination of long-term hydrostatic strength of thermoplastic materials in tubular form by extrapolation

GB/T 18475 Material Grading and Nomenclature for Thermoplastic Pressure Pipes and Fittings General Use (Design) Factor

GB/T 19278-2018 General terms and definitions for thermoplastic pipes, fittings and valves

GB/T 19471.1 Plastic piping system rigid polyvinyl chloride (PVC-U) pipe elastic sealing ring type socket joint angle seal test test method

GB/T 19471.2 Plastic piping system rigid polyvinyl chloride (PVC-U) pipe elastic sealing ring type socket joint negative pressure sealing test test method

GB/T 21300 Determination of Opacity of Plastic Pipes and Fittings

GB/T 21873 Specification for material of interface seals for rubber seals for water supply, drainage and sewage pipes

GB/T 32018.2 Impact-modified polyvinyl chloride (PVC-M) piping system for water supply -
Part 2.Pipe fittings

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