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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 20568-2022

Replacing GB/T 20568-2006

Metallic materials - Tube ring hydraulic pressure test

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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 replaces GB/T 20568-2006 "Hydraulic Test Method for Pipe Rings of Metallic Materials", compared with GB/T 20568-2006, except

In addition to structural adjustments and editorial changes, the main technical changes are as follows.

--- Changed the symbols of the measured value of the thickness of the pipe ring and the measured value of the outer diameter of the pipe ring (see Table 1, Table 1 of the.2006 edition);

--- Change "sample" to "ring sample" (see Chapter 7, Chapter 5 of the.2006 edition);

--- Changed the allowable error requirements for internal pressure measurement (see 8.4, 6.4 of the.2006 edition);

--- Changed the hoop strength evaluation of the pipe body with d/a < 20, from the note to the clause (see 9.3, 7.3 of the.2006 edition);

--- Added the rounding of test result data (see Chapter 10);

--- Increased the comparison of steel pipe symbols and descriptions (see Appendix A).

This document is modified and adopted ISO 15363.2017 "Hydraulic test method for pipe rings of metallic materials".

Compared with ISO 15363.2017, this document has the following structural adjustments.

--- Added the chapter "Rounding of test result values";

--- Adjusted the numbers of Appendix A and Appendix B.

The technical differences between this document and ISO 15363.2017 and their reasons are as follows.

--- Increased the test requirements for weld samples (see 8.2) to increase the applicability of the standard and meet the inspection requirements of different products;

--- Increased the numerical rounding requirements of the test results to improve the operability of the test (see Chapter 10).

The following editorial changes have been made to this document.

--- Added Appendix C (informative) chain extensometer.

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

1 Scope

This document specifies the hydraulic test method for metal pipe rings.

This document is applicable to pipes whose outer diameter is greater than 120mm and the ratio of outer diameter and wall thickness is not less than 20.1.

The purpose of the test is to determine the hoop stress value that achieves the required specified hoop total strain.

2 Normative references

There are no normative references in this document.

3 Terms and Definitions

There are no terms and definitions that need to be defined in this document.

4 Symbols and descriptions

The symbols and corresponding descriptions used in this document are shown in Table 1.

Table 1 Symbols and Descriptions

Symbol Description Unit

a Pipe ring thickness measurement in mm

At specified total hoop strain %

d Measured value of outer diameter of pipe ring mm

l Pipe ring length mm

p Static pressure MPa to reach the specified total hoop strain

RAt specifies the hoop strength MPa corresponding to the total hoop strain

Note. For symbols used in relevant steel pipe product standards, see Appendix A.

5 Principles

The annular specimen between the two pressure plates expands unconstrainedly under the internal liquid pressure; the outer perimeter of the tube is the effective gauge length of the specimen.

The test is carried out by using annular specimens taken from welded or seamless pipes, the thickness of which is determined according to the capabilities of the testing equipment and the strength of the pipe body

(see picture 1). All sharp edges were removed from the machined surfaces of the specimens prior to testing. The hydraulic excess required to achieve the specified hoop strain

When the capability of the test instrument is exceeded, the improved test can be carried out with reference to the method described in Appendix B.

This test method is specified when measurement of hoop strength is required, which is not subject to cold work deformation that occurs when standard tensile specimens are flattened

and residual stress. Standard tensile tests are essential when the determination of tensile strength and elongation is required.