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Glass-reinforced thermosetting plastics (GRP) pipes and fittings — Test methods to prove the design of cemented or wrapped joints

Tubes et raccords en plastiques thermodurcissables renforcés de verre (PRV) — Méthodes d'essai pour confirmer la conception des assemblages scellés ou enrobés

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

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Introduction

In a pipework system, pipes and fittings of different nominal pressures and stiffness may be used.

A joint may be made between pipes and/or fittings and should be designed such that its performance is equal to or better than the requirements of the pipeline, but not necessarily of the components being joined.

The requirements for the assembly of the joint are not included in this standard, but they should be in accordance with the manufacturer's recommendations.

Glass-reinforced thermosetting plastics (GRP) pipes and fittings — Test methods to prove the design of cemented or wrapped joints

1 Scope

This International Standard specifies methods of test for cemented or wrapped joints for plastics piping systems made of glass-reinforced thermosetting plastics (GRP) for buried and non-buried pipelines. This standard is only applicable to the joint and covers methods of test to prove its design. It assumes that the joint either is or is not intended to be subject to the effects of hydrostatic end thrust.

The tests detailed in 7.1 to 7.6 inclusive are applicable to cemented or wrapped joints intended to be used in either buried or non-buried applications. The bending tests detailed in 7.4 can be used to prove the design where joints are either intended to be used in buried applications or are intended to be used in particular above-ground situations where the tests may be considered appropriate.

With the exception of 7.4 these test procedures are applicable to joints between pipes and fittings of all nominal sizes. The tests detailed in 7.4 are applicable to joints between pipes and fittings up to and including DN 600. The tests are applicable to the evaluation of joints intended for the conveyance of liquids at temperatures specified in the referring standards (see Clause 2).

2 Principle

A joint is subjected to a specified internal pressure and, if applicable, longitudinal loading. The procedure includes prolonged static tests at elevated pressures and cyclic testing.

A joint is subjected to a specified internal negative pressure. This also simulates an external positive pressure.

NOTE 1 The only reason for testing the resistance to external pressure differential is to ensure adequate safety against infiltration of pollutants through the joint into the fluid carried in the piping system. Under these test conditions pipes with low stiffness may require support to prevent buckling.

A series of tests that are performed under bending is included.

At the end of each of the tests the joint is inspected for signs of leakage and damage and, unless otherwise specified, if either has occurred then the joint has failed.

If the joint is to be used in systems where the maximum operating temperature is higher than the value given in the referring standard the test conditions can be modified accordingly.

NOTE 2 It is assumed that the following test parameters are set by the standard making reference to this standard:

a) length, L, of the assembled test piece (see 4.1);

b) number of test pieces to be used (see 4.2);

c) if applicable, conditioning other than as given in Clause 5;

d) test temperature and its permissible deviations (see Clause 6);