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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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Published in Switzerland

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 6, *Reinforced plastics pipes and fittings for all applications*.

This second edition cancels and replaces the first edition ISO 8533:2003, which has been technically revised. It also incorporates the Amendment ISO 8533:2003/Amd1:2012. The main changes compared to the previous edition are as follows:

- changed the Scope to mention that the test procedure is a destructive test and that the bending test is limited up to DN 600;
- changed the Scope to cover the proof of structural design of cemented or wrapped joints;
- the Terms and definitions clause was added to this document;
- changed testing sequences from mandatory to recommended;
- modified test sequence for the proof of the design, [Clause 9](#);
- changes in [Table 1](#) with modified testing sequences for the proof of the design of cemented or wrapped joints;
- modification of bending test sequence;
- addition of an alternative bending test (Method B).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

In a pipework system, pipes and fittings of different nominal pressures and nominal 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 document, but they should be in accordance with the manufacturer's recommendations.

The material-dependent parameters and/or performance requirements are stated in the referring standard.



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

## 1 Scope

This document specifies methods of test for cemented or wrapped joints for buried and above ground glass-reinforced thermosetting plastics (GRP) piping systems. This document 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 9.2, 9.4 to 9.6 inclusive are applicable to cemented or wrapped joints intended to be used in buried or above-ground applications. The bending tests detailed in 9.3 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 procedure detailed in 9.3, these test procedures are applicable to joints for pipes and fittings of all nominal sizes. The tests detailed in 9.3 are applicable to joints for pipes and fittings up to and including DN 600. The tests are applicable for evaluating joints intended for applications conveying liquids at temperatures specified in the referring standards.

The test procedures in this document are damaging to the test piece, which will not be suitable for reuse after these tests. The test procedure is applied for type testing purposes only.

This document is applicable only to the joint and specifies methods of test to prove its design.

## 2 Normative references

There are no normative references in this document.

## 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

### 3.1

#### **pressure**

hydrostatic gauge pressure

Note 1 to entry: Expressed in bar.

### 3.2

#### **bending**

beam bending in the pipe and joint configuration as a result of a vertical force on the cemented or wrapped joint