

This is a preview of "BS ISO 8639:2023". [Click here to purchase the full version from the ANSI store.](#)



BSI Standards Publication

**Glass-reinforced thermosetting plastics (GRP)  
pipes and fittings — Test methods for leaktightness  
and proof of structural design of flexible joints**

---

This is a preview of "BS ISO 8639:2023". [Click here to purchase the full version from the ANSI store.](#)

## National foreword

This British Standard is the UK implementation of ISO 8639:2023. It supersedes BS ISO 8639:2016, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/88/2, Plastics piping for pressure applications.

A list of organizations represented on this committee can be obtained on request to its committee manager.

### Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2023  
Published by BSI Standards Limited 2023

ISBN 978 0 539 20105 5

ICS 23.040.60

### Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2023.

### Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

---

This is a preview of "BS ISO 8639:2023". [Click here to purchase the full version from the ANSI store.](#)

Third edition  
2023-04-25

---

---

## **Glass-reinforced thermosetting plastics (GRP) pipes and fittings — Test methods for leaktightness and proof of structural design of flexible joints**

*Tubes et raccords en plastiques thermodurcissables renforcés de verre  
(PRV) — Méthodes d'essai pour l'étanchéité et preuve de conception  
structurelle de joint flexible*



Reference number  
ISO 8639:2023(E)

© ISO 2023

This is a preview of "BS ISO 8639:2023". [Click here to purchase the full version from the ANSI store.](#)



## **COPYRIGHT PROTECTED DOCUMENT**

© ISO 2023, Published in Switzerland

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

This is a preview of "BS ISO 8639:2023". [Click here to purchase the full version from the ANSI store.](#)

## Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Principle</b> .....	<b>2</b>
<b>5 Apparatus</b> .....	<b>2</b>
5.2 Supports and restraints.....	<b>2</b>
<b>6 Test pieces</b> .....	<b>5</b>
6.1 Assembly.....	<b>5</b>
6.2 Number.....	<b>6</b>
<b>7 Conditioning</b> .....	<b>6</b>
<b>8 Test temperature</b> .....	<b>6</b>
<b>9 Procedure</b> .....	<b>6</b>
9.1 General.....	<b>6</b>
9.2 Negative pressure.....	<b>6</b>
9.3 Simultaneous angular deflection and draw.....	<b>7</b>
9.4 Simultaneous draw and deformation.....	<b>7</b>
9.5 Cyclic pressure.....	<b>8</b>
9.6 Positive static pressure.....	<b>8</b>
<b>10 Test report</b> .....	<b>8</b>

This is a preview of "BS ISO 8639:2023". [Click here to purchase the full version from the ANSI store.](#)

## 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 of the voluntary nature of standards, 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 [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 third edition cancels and replaces the second edition (ISO 8639:2016), which has been technically revised.

The main changes are as follows:

- [Clause 2](#) "Normative References" has been introduced and the clauses that follow have been renumbered;
- the title of [Figure 1](#) has been modified;
- key reference 7 in [Figure 2](#) has been modified.

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).

This is a preview of "BS ISO 8639:2023". [Click here to purchase the full version from the ANSI store.](#)

## Introduction

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

Any joint made between pipes and/or fittings 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 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 specification.

This is a preview of "BS ISO 8639:2023". [Click here to purchase the full version from the ANSI store.](#)



This is a preview of "BS ISO 8639:2023". [Click here to purchase the full version from the ANSI store.](#)

# Glass-reinforced thermosetting plastics (GRP) pipes and fittings — Test methods for leaktightness and proof of structural design of flexible joints

## 1 Scope

This document specifies test methods for flexible non-thrust resistant socket-and-spigot joints with elastomeric sealing elements for buried and aboveground glass-reinforced thermosetting plastics (GRP) pipeline applications. It covers methods of test for the leaktightness and resistance to damage of the joint only, when subject to specified combinations of longitudinal extension (draw), angular movement (angular deflection), compression (deformation) perpendicular to the pipe axis and internal pressure. This document is applicable to joints for either pressure or non-pressure applications.

**NOTE** The joints tested in accordance with this document are subjected to conditions which measure their ability to function and thereby prove the design of the joint, especially for type test purposes.

These test procedures are applicable to joints for pipes and fittings of all nominal sizes. The tests are suitable for the evaluation of joints intended for applications in which the liquids are conveyed 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 intended for type testing purposes.

## 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 terminology databases for use in standardization at the following addresses:

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

### 3.1

#### **pressure**

hydrostatic gage pressure

### 3.2

#### **angular deflection**

angle between the axes of the joint and the consecutive pipe(s), expressed in degrees (°)

### 3.3

#### **draw**

longitudinal movement of the pipe relative to the socket (joint), expressed in millimetres (mm)

### 3.4

#### **total draw**

sum of the draw, and the additional longitudinal movement, of joint components due to the presence of angular deflection, expressed in millimetres (mm)