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First edition  
2021-06

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## **Plastics piping systems for pressure and non-pressure water supply, drainage or sewerage — Glass-reinforced thermosetting plastics (GRP) systems based on unsaturated polyester (UP) resin**

*Systèmes de canalisations en matières plastiques pour l'alimentation en eau, les branchements et les collecteurs d'assainissement avec ou sans pression — Systèmes en plastiques thermodurcissables renforcés de verre (PRV) à base de résine de polyester non saturé (UP)*



Reference number  
ISO 23856:2021(E)

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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 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*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 155, *Plastics piping systems and ducting systems*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition cancels and replaces ISO 10639:2017 (second edition) and ISO 10467:2018 (second edition), which have been technically revised.

The main changes compared to the previous editions are as follows:

- documents combined;
- editorial changes throughout.

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

This document has been produced by merging ISO 10639, ISO 10467, EN 1796 and EN 14364. As these standards were almost identical, apart from the requirements for chemical resistance of sewer pipes on the one hand, and no negative impact on water quality of drinking water pipes on the other hand, it was decided that it would be beneficial for users to be able to refer to a single document, irrespective of application or region.

The content of this document is summarized as follows:

[Clause 4](#) specifies the general aspects of GRP UP piping systems.

[Clause 5](#) specifies the characteristics of pipes made from GRP UP with or without aggregates and/or fillers. The pipes can have a thermoplastics or thermosetting resin liner. [Clause 5](#) also specifies the test parameters for the test methods referred to in this document. For pipes intended for sewer applications, the resistance to chemical attack is stated in [5.4](#). For other applications, the requirements in [5.3.4](#) apply.

[Clause 6](#) specifies the characteristics of fittings made from GRP UP, with or without a thermoplastics or thermosetting resin liner. [Clause 6](#) specifies the dimensional and performance requirements for bends, branches, reducers, saddles and flanged adaptors. [Clause 6](#) covers requirements to prove the structural design of fittings. It is applicable to fittings made using any of the following techniques:

- fabrication from straight pipes;
- moulding by
  - 1) filament winding,
  - 2) tape winding,
  - 3) contact moulding, and
  - 4) hot or cold compression moulding.

[Clause 7](#) is applicable to joints to be used in the GRP UP piping systems, both buried and non-buried. It covers requirements to prove the design of the joint. [Clause 7](#) specifies type test performance requirements for the following joints as a function of the declared nominal pressure rating of the pipeline or system:

- a) socket-and-spigot (including double-socket) joints or mechanical joints;
- b) locked socket-and-spigot joints;
- c) cemented or wrapped joints;
- d) bolted flange joints.