



SLOVENSKI STANDARD SIST-TS CEN/TS 14578:2004

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Nadomešča:
SIST EN 1636-6:1999

Plastics piping systems for water supply or drainage and sewerage - Glass-reinforced thermosetting plastics (GPR) based on unsaturated polyester resin (UP) - Recommended practice for installation

Plastics piping systems for water supply or drainage and sewerage - Glass-reinforced thermosetting plastics (GPR) based on unsaturated polyester resin (UP) - Recommended practice for installation

Kunststoff-Rohrleitungssysteme für den Wasserversorgung mit oder ohne Druck - Glasfaserverstärkten duroplastischen Kunststoffe (GFK) auf der basis von ungesättigtem Polyesterharz (UP) - Empfohlenes Verfahren zur Verlegung

Systemes de canalisations plastiques pour l'adduction d'eau et l'assainissement - Plastiques thermodurcissables renforcés de verre (PRV) a base de résine de polyester non saturé (UP) - Pratique recommandée pour la pose

Ta slovenski standard je istoveten z: CEN/TS 14578:2003

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23.040.20	Cevi iz polimernih materialov	Plastics pipes
91.140.80	Drenažni sistemi	Drainage systems
93.030	Zunanji sistemi za odpadno vodo	External sewage systems

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TECHNICAL SPECIFICATION
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Supersedes EN 1636-6:1997

English version

Plastics piping systems for water supply or drainage and
sewerage – Glass-reinforced thermosetting plastics (GPR)
based on unsaturated polyester resin (UP) – Recommended
practice for installation

Systèmes de canalisations plastiques pour l'adduction
d'eau et l'assainissement – Plastiques thermodurcissables
renforcés de verre (PRV) à base de résine de polyester
non saturé (UP) – Pratique recommandée pour la pose

Kunststoff-Rohrleitungssysteme für den Wasserversorgung
mit oder ohne Druck – Glasfaserverstärkten
duroplastischen Kunststoffe (GFK) auf der basis von
ungesättigtem Polyesterharz (UP) – Empfohlenes
Verfahren zur Verlegung

This Technical Specification (CEN/TS) was approved by CEN on 24 March 2003 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (CEN/TS 14578:2003) has been prepared by Technical Committee CEN /TC 155, "Plastics piping systems and ducting systems" the secretariat of which is held by NEN.

This document supersedes EN 1636-6:1997 [1].

It is also the result of a merging of the final draft prEN 1115-6:1997 [2] and the draft European standard prEN 1796-6:1995 [3].

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

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CEN/TS 14578:2003 (E)**Introduction**

System Standards prEN 1796 [4] and prEN 14364 [5] specify the properties of a piping system and its components when made from glass-reinforced thermosetting plastics (GRP) based on unsaturated polyester resin (UP) intended to be used for pressure and non-pressure water or sewerage applications. A System Standard includes specifications for pipes, fittings and joints and makes reference to supporting standards covering test methods, recommended practices for installation (this Technical Specification) and procedures for assessment of conformity.

The committee is preparing a standard to cover matters such as design procedures, determination of long-term safety factors based on a semi-probabilistic approach, surge allowance and allowable negative pressures for buried GRP pipe applications. Reference to this standard will be included in the document when available.

This supporting standard, which covers practices for installation, is intended to be used in conjunction with ENV 1046 by, amongst others, end-users, authorities, design engineers, testing and certification institutes and manufacturers.

In the event of ENV 1046 being withdrawn in the future, the relevant parts of ENV 1046 will be incorporated in this standard as an addendum, so that the appropriate requirements, which were implemented in ENV 1046, remain available and applicable to System Standards for applications using GRP-UP pipes and fittings.

In this standard, much of the guidance is expressed as requirements, e.g. by use of "shall" or by instructions in the imperative. It is strongly recommended that these be followed whenever applicable.

Other guidance is presented for consideration as a matter of judgement in each case, e.g. by use of "should".

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1 Scope

This Technical Specification (CEN/TS) specifies recommended practices for installing piping systems made of glass-reinforced thermosetting plastics based on unsaturated polyester resin (GRP-UP), intended to be used for pressure or non-pressure water or sewerage applications. It is applicable to GRP-UP piping systems of nominal sizes from DN 100 to DN 3000 which are intended to be used for the conveyance of liquids at temperatures up to 50 °C and at pressures of 0,5 bar and greater.

NOTE 1 Piping systems conforming to prEN 1796 [4] or prEN 14364 [5] can also be used for above-ground applications provided the influence of the environment and the supports is considered in the design of the pipes and joints.

NOTE 2 It is the responsibility of the purchaser or specifier to make the appropriate selections from these aspects, taking into account their particular requirements and any relevant national regulations and installation practices or codes.

2 Normative references

This Technical Specification incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this Technical Specification only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

ENV 1046:2001, *Plastics piping and ducting systems — Systems outside building structures for the conveyance of water or sewage — Practices for installation above and below ground.*

3 Terms and definitions

For the purposes of this Technical Specification the terms and definitions given in ENV 1046:2001 apply.

4 Procedures

4.1 General

Pipes and fittings covered by prEN 1796 [4] or prEN 14364 [5] shall be installed in accordance with ENV 1046 taking into account the following information and guidance. In conditions not covered thereby the engineer shall make his own recommendations.

Attention is drawn to the limitations that may apply to negative pressure in service, in particular if the pipe zone backfill material is removed, and to mechanical compaction requirements during installation for pipe stiffness up to and including SN 5000 (see also ENV 1046).

4.2 Special conditions for pipes having a nominal stiffness less than SN 1250

Pipes having a nominal stiffness less than SN 1250 are not intended for laying directly in the ground. However, whenever they are installed in the ground they shall be encased in concrete.

5 Specific information and recommendations

5.1 General

NOTE ENV 1046 requires the information given in 5.2 to 5.12 to be provided in this standard.

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5.2 Special transportation requirements

When following the guidance given in ENV 1046 particular care shall be taken to avoid impact damage. Pipes and fittings shall be secured before transporting them to or around the site.

5.3 Maximum storage heights on site

The number of layers in a storage stack should not exceed those given in Table 1, except in the case of pipes with a nominal stiffness greater than 2500, which may be stacked higher if precautions are taken to ensure that the stack is stable.

Table 1 — Maximum number of layers in a stack

Nominal size DN	Maximum number of layers
$100 \leq \text{DN} \leq 300$	5
$300 < \text{DN} \leq 600$	4
$600 < \text{DN} \leq 900$	3
$900 < \text{DN} \leq 1400$	2
$1400 < \text{DN}$	1

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5.4 Maximum storage period in direct sunlight

When materials such as ultraviolet inhibitors have been incorporated or other protective pipe constructions have been used, pipes and fittings may be stored in direct sunlight for their design lives. Where the pipes and fittings are not thus protected they should not be exposed to sunlight for longer than two years. Care should be taken to protect rubber-sealing profiles from prolonged exposure to sunlight.

5.5 Any climatic conditions requiring special storage

Apart from high winds, there are no climatic conditions that require special storage conditions for products conforming to prEN 1796 [4] or prEN 14364 [5].

5.6 Limiting deflections

In no case shall the vertical diameter increase by more than 1,5 % of the mean diameter due to installation procedures e.g. the relative initial ovalization shall not exceed 1,5 %. This may be verified by measurements when the pipe zone backfilling operation is completed.

Non-pressure pipes conforming to prEN 1796 [4] or prEN 14364 [5] usually have an allowable long-term deflection of 6 % and both pressure and non-pressure pipes have an allowable maximum initial deflection of 3 % for design purposes. The permitted initial deflections may need to be lower than 3 % depending upon the nature of the undisturbed native soil, the backfill material and degree of compaction. The initial deflection should be determined and monitored to assist in achieving a satisfactory installation.

5.7 Coefficient of linear expansion

A typical range for the coefficient of linear expansion, α , is $20 \times 10^{-6}/^{\circ}\text{C}$ to $50 \times 10^{-6}/^{\circ}\text{C}$. This property varies with the nature and quantity of reinforcement in any particular pipe. The manufacturer shall provide the relevant information when requested by the purchaser.

5.8 Longitudinal tensile modulus and strength

These properties vary with the nature and quantity of reinforcement in any particular pipe. The manufacturer shall provide this information when requested by the purchaser.

5.9 Suitability for use in areas exposed to sunlight

If it is intended to install the pipes in areas exposed to sunlight, the manufacturer should be informed so that he can ensure their suitability for this application.

5.10 Appropriate jointing system

Joints described in and conforming to prEN 1796 ^[4] or prEN 14364 ^[5], as applicable, should be used.

5.11 Cold bending

GRP-UP pipes are not suitable for cold bending. Changes in direction should be achieved either by using fittings conforming to prEN 1796 ^[4] or prEN 14364 ^[5] or by utilizing the flexibility of the joint.

5.12 Permitted rates of loss of water and/or pressure

Non-pressure systems are not subject to the pressure test referred to in ENV 1046.

Pressure systems require inspection and testing before commissioning and attention is drawn to the requirements in EN 1610 as these may be applicable.

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