

English Version

Plastics piping systems - Validated design parameters of buried thermoplastics piping systems

Systèmes de canalisations en matières plastiques -
Paramètres de calcul validés pour les systèmes
enterrés de canalisations en matières
thermoplastiques

Kunststoff-Rohrleitungssysteme - Bestätigte
Berechnungsparameter von erdverlegten
thermoplastischen Rohrleitungssystemen

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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European foreword

This document (CEN/TS 15223:2017) has been prepared by Technical Committee CEN/TC 155 “Plastics piping systems and ducting systems”, the secretariat of which is held by NEN.

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Introduction

In Europe, several design methods exist and some are still under development. The plastics pipes industry has carried out a lot of research with full-scale trials. From these researches, graphs have been made that show the deflection in the pipes immediately after installation. In addition, the so-called settlement period is measured. This settlement will always take place. In case that heavy traffic is present, the final deflection will be reached faster.

It is strongly advised to check any calculated deflection with the values in the two design graphs.

The information compiled is meant to be used by designers. The values given are meant for general guidance.

For the purpose of design using simple methods, two compactible soil groups are used, granular and cohesive.

If applicable, reference is made to EN 1295-1, EN 1610, CEN/TR 1046 and national practices.

1 Scope

This Technical Specification covers validated design parameters of buried thermoplastics piping systems for functional and structural design for the following applications:

- pressure (excluding piping systems for gaseous fluids and industrial applications);
- non-pressure.

The functional design is based on relevant standards and commonly used practices.

Depending on the project parameters, the route for structural design can be

- either established by long term experience (within certain limitations),
- or calculated according to CEN/TR 1295-2 [8] by using thermoplastic pipe material related properties and design criteria.

NOTE 1 The route for the structural design is shown in the flowchart given in Figure 1 in 4.1.

NOTE 2 Industrial applications also includes district heating

Since in practice precise details of types of soil and installation conditions are not always available at the design stage, the choice of design assumptions is left to the judgement of the designer/specifier. In this connection, this guide can only provide general indications and advice.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 476, *General requirements for components used in drains and sewers*

EN 805, *Water supply - Requirements for systems and components outside buildings*

EN 1295-1, *Structural design of buried pipelines under various conditions of loading - Part 1: General requirements*

EN 1610:2015, *Construction and testing of drains and sewers*

CEN/TR 1046:2013, *Thermoplastics piping and ducting systems - Systems outside building structures for the conveyance of water or sewage - Practices for underground installation*

EN ISO 9969, *Thermoplastics pipes - Determination of ring stiffness (ISO 9969)*

EN ISO 12162, *Thermoplastics materials for pipes and fittings for pressure applications - Classification, designation and design coefficient (ISO 12162)*

EN ISO 13968, *Plastics piping and ducting systems - Thermoplastics pipes - Determination of ring flexibility (ISO 13968)*