

norm**NEN-EN 17152-1**

Plastics piping systems for non-pressure underground conveyance and storage of non-potable water - Boxes used for infiltration, attenuation and storage systems - Part 1: Specifications for storm water boxes made of PP and PVC

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Voorbeeld
Preview

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English Version

Plastics piping systems for non-pressure underground conveyance and storage of non-potable water - Boxes used for infiltration, attenuation and storage systems - Part 1: Specifications for storm water boxes made of PP and PVC

Systèmes de canalisations en plastique pour le transport et le stockage souterrains sans pression de l'eau non potable - Structures alvéolaires ultra-légères pour les systèmes d'infiltration, de rétention et de stockage - Partie 1 : Spécifications relatives aux structures alvéolaires ultra-légères pour eaux pluviales fabriquées à partir de PP et de PVC

Kunststoff-Rohrleitungssysteme für die drucklose unterirdische Entwässerung für Nicht-Trinkwasser - Versickerungsblöcke zur Verwendung in Infiltrations-, Zwischenspeicher- und Speichersystemen - Teil 1: Festlegungen für Regenwasserabfluss-Versickerungsblöcke aus PP und PVC

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European foreword

This document (prEN 17152-1:2017) 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 is currently submitted to the CEN Enquiry.

This standard is a part of a System Standard for plastics piping systems of particular materials for specified applications. There are a number of such System Standards.

System Standards are based on the results of the work being undertaken in ISO/TC 138 “Plastics pipes, fittings and valves for the transport of fluids”, which is a Technical Committee of the International Organization for Standardization (ISO).

They are supported by separate standards on test methods to which references are made throughout the System Standard.

The System Standards are consistent with general standards on functional requirements and on recommended practice for installation.

EN 17152 consists of the following Parts under the general title Plastics piping systems for non-pressure underground conveyance and storage of non-potable water — Boxes used for infiltration, attenuation and storage systems — Part 1: Specifications for storm water boxes made of PP and PVC:

- Part 1: Specifications for storm water boxes made of PP and PVC;
- Part 2: Specifications for systems (water reservoir);
- Part 3: Assessment of conformity (CEN/TS);

National standards specifically for pipes and fittings for the transport of surface water are not considered to be conflicting with this standard and can thus be allowed to coexist.

Introduction

This standard is the result of intensive discussions within Working Group 26 of Technical Committee 155, which was entrusted with the development of this standard. The result of this standard is intended to reflect the current state of knowledge of determining and predicting the long-term lifetime of product groups mentioned in the scope while maintaining reasonable testing times for producers and developers of these systems.

The products covered by this standard are part of storm water management systems.

The working group is aware that these products are used in modular systems and that predicted lifetimes from this standard might not always reflect the maximum allowable loads on an installed system.

The requirements of this standard determine the long-term compression strength of only one unit.

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Preview

1 Scope

This document gives the definitions and specifies the minimum requirements for injection moulded, extruded and thermoformed thermoplastics cuboid shaped boxes, including integral components, used in underground systems for infiltration, attenuation and storage of non-potable water (e.g. storm water) and manufactured from unplasticized poly(vinyl chloride) (PVC-U) or polypropylene (PP).

NOTE 1 Specifications and design rules for systems (water reservoir) are described in part 2 of EN 17152.

Product properties are determined by a combination of material specifications, design and manufacturing process.

These boxes are intended for buried underground use, e.g. in landscape, pedestrian or vehicular traffic areas.

A box can either be factory assembled or site assembled from different components.

These boxes are intended to be used as elements in a modular system where the manufacturer has clearly stated in the documentation how the components are assembled to create a complete infiltration, attenuation or storage construction.

NOTE 2 Non load bearing component(s) can be manufactured by various methods e.g. extrusion, injection moulding, rotational moulding, thermoforming and low-pressure injection moulding.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

prEN 17151:2017, *Plastics piping systems for non-pressure underground conveyance and storage of non-potable water — Test method for determination of long term compression strength of boxes*

prEN 17150:2017, *Plastics piping systems for non-pressure underground conveyance and storage of non-potable water — Test method for determination of short term compression strength of boxes*

EN ISO 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test (ISO 179-1)*

EN ISO 306, *Plastics — Thermoplastic materials — Determination of Vicat softening temperature (VST) (ISO 306)*

EN ISO 472:2013, *Plastics — Vocabulary (ISO 472:2013)*

EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1)*

EN ISO 527-2, *Plastics — Determination of tensile properties — Part 2: Test conditions for moulding and extrusion plastics (ISO 527-2)*

EN ISO 527-3, *Plastics — Determination of tensile properties — Part 3: Test conditions for films and sheets (ISO 527-3)*

EN ISO 580:2005, *Plastics piping and ducting systems — Injection-moulded thermoplastics fittings — Methods for visually assessing the effects of heating (ISO 580:2005)*

EN ISO 899-1, *Plastics — Determination of creep behaviour — Part 1: Tensile creep (ISO 899-1)*

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EN ISO 899-2, *Plastics — Determination of creep behaviour — Part 2: Flexural creep by three-point loading (ISO 899-2)*

EN ISO 1043-1:2011, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics (ISO 1043-1:2011)*

EN ISO 1133-1, *Plastics — Determination of the melt mass-flow rate (MFR) and melt volume-flow rate (MVR) of thermoplastics — Part 1: Standard method (ISO 1133-1)*

EN ISO 1167-1, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 1: General method (ISO 1167-1)*

EN ISO 1167-2, *Thermoplastics pipes, fittings and assemblies for the conveyance of fluids — Determination of the resistance to internal pressure — Part 2: Preparation of pipe test pieces (ISO 1167-2)*

EN ISO 1183-1, *Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method (ISO 1183-1)*

EN ISO 3126, *Plastics piping systems — Plastics components — Determination of dimensions (ISO 3126)*

EN ISO 3451-1, *Plastics — Determination of ash — Part 1: General methods (ISO 3451-1)*

EN ISO 3451-5, *Plastics — Determination of ash — Part 5: Poly(vinyl chloride) (ISO 3451-5)*

EN ISO 11357-6, *Plastics — Differential scanning calorimetry (DSC) — Part 6: Determination of oxidation induction time (isothermal OIT) and oxidation induction temperature (dynamic OIT) (ISO 11357-6)*

EN ISO 11358-1, *Plastics — Thermogravimetry (TG) of polymers — Part 1: General principles (ISO 11358-1)*

EN ISO 13229, *Thermoplastics piping systems for non-pressure applications — Unplasticized poly(vinyl chloride) (PVC-U) pipes and fittings — Determination of the viscosity number and K-value (ISO 13229)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 472:2013, EN ISO 1043-1:2011 and the following apply.

3.1

box

thermoplastic cuboid shaped element, with or without sidewalls, used to create a modular storage system

3.2

integral component

load bearing component contributing to the overall strength of the box

3.3

modular storage system

system made of repeating boxes

3.4**attenuation system**

modular system designed to reduce the peak flow from a given site by providing a temporary underground storm water storage facility

3.5**infiltration system**

modular system designed to provide a temporary underground storage facility from which storm water soaks into the surrounding ground

3.6**storage system**

modular system designed to provide an underground storage facility for storm water

3.7**void ratio**

total available volume for water storage divided by the total envelope cuboid volume for a box

3.8**long term compression strength**

maximum applied stress for which the box will survive without creep rupture for 50 years determined as the lower 95 % confidence limit (LCL) for the stress leading to a failure at the extrapolated lifetime, in kN/m²

3.9**virgin material**

material in the form such as granules or powder that have not been subjected to use or processing other than that required for their manufacture and to which no reprocessed or recycled material has been added

3.10**mineral modified material**

material to which minerals have been added during specific processing operation(s) which during such processing is distributed in the material

3.11**own reprocessed material**

material prepared from rejected unused boxes and/or integral components, including trimmings from the production of boxes, that will be reprocessed in a manufacturer's plant after having been previously processed by the same manufacturer by a process such as moulding, extrusion or thermoforming, and for which the complete formulation is known

3.12**recycled material**

material comprising either one of the following forms:

- material from used or unused infiltration and storage boxes which have been cleaned and crushed or ground;
- material from used or unused PVC-U or PP products other than infiltration and storage boxes, regardless of where they are manufactured

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