

District heating pipes - Pre-insulated flexible pipe systems - Part 3: Non bonded system with plastic service pipes; requirements and test methods

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 15632-3:2010+A1:2015 sisaldab Euroopa standardi EN 15632-3:2010+A1:2014 ingliskeelset teksti.	This Estonian standard EVS-EN 15632-3:2010+A1:2015 consists of the English text of the European standard EN 15632-3:2010+A1:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 17.12.2014.	Date of Availability of the European standard is 17.12.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 23.040.01

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Aru 10, 10317 Tallinn, Eesti; koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

English Version

**District heating pipes - Pre-insulated flexible pipe systems - Part  
3: Non bonded system with plastic service pipes; requirements  
and test methods**

Tuyaux de chauffage urbain - Systèmes de tuyaux flexibles  
préisolés - Partie 3: Système non bloqué avec tube de  
service en plastique - prescriptions et méthodes d'essai

Fernwärmerohre - Werkmäßig gedämmte flexible  
Rohrsysteme - Teil 3: Nicht-Verbundsysteme mit  
Mediumrohren aus Kunststoff - Anforderungen und  
Prüfungen

This European Standard was approved by CEN on 10 December 2009 and includes Amendment 1 approved by CEN on 8 November 2014.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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

## Contents

Page

Foreword.....	3
Introduction .....	4
1     Scope .....	5
2     Normative references .....	5
3     Terms and definitions .....	6
4     Classification.....	6
4.1   Operating temperatures and service life .....	6
4.2   Operating pressures.....	6
4.3   General requirements.....	7
4.4   Service pipes and fittings .....	7
4.4.1   Quality .....	7
4.4.2   Oxygen tightness.....	7
4.5   Sealing in linear direction .....	7
4.6   Water vapour permeation .....	7
5     Test procedures .....	8
5.1   General.....	8
5.2   Temperature cycle test.....	8
Annex A (informative) Application of Miner's Rule.....	9

## Foreword

This document (EN 15632-3:2010+A1:2014) has been prepared by Technical Committee CEN/TC 107 "Prefabricated district heating pipe systems", the secretariat of which is held by DS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 2015, and conflicting national standards shall be withdrawn at the latest by June 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 15632-3:2010.

This document includes Amendment 1 approved by CEN on 2014-11-08.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **A1** **A1**.

This document is one of a series of standards which form several parts of EN 15632, *District heating pipes — Pre-insulated flexible pipe systems*:

Part 1: *Classification, general requirements and test methods*;

Part 2: *Bonded system with plastic service pipes; requirements and test methods*;

Part 3: *Non bonded system with plastic service pipes; requirements and test methods*;

Part 4: *Bonded system with metal service pipes; requirements and test methods*.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## Introduction

Pre-insulated flexible non bonded pipe systems with plastic service pipes are widely used in district and local heating networks.

This part of the series of standards for the various types of flexible pipe systems is intended to be used in connection with EN 15632-1 where the basic design criteria for flexible district heating pipes are specified.

This document is a preview generated by EVS

## 1 Scope

This European Standard provides requirements and test methods for flexible, pre-insulated, direct buried district heating pipes with plastic service pipes and no bonding between the layers of the pipes.

This European Standard is valid for maximum operating temperatures of 95 °C and maximum operating pressures up to 10 bar for a design lifetime of at least 30 years.

This European Standard does not cover surveillance systems.

**NOTE** For higher temperatures or for the transport of other fluids, for example potable water, additional requirements and testing is needed. Such requirements are not specified in this European Standard.

## 2 Normative references

The following referenced documents are indispensable for the application 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.

EN 489, *District heating pipes — Preinsulated bonded pipe systems for directly buried hot water networks — Joint assembly for steel service pipes, polyurethane thermal insulation and outer casing of polyethylene*

EN 15632-1:2009+A1:2014, *District heating pipes — Pre-insulated flexible pipe systems — Part 1: Classification, general requirements and test methods*

EN 15632-2:2009+A1:2014, *District heating pipes — Pre-insulated flexible pipe systems — Part 2: Bonded system with plastic service pipes; requirements and test methods*

EN ISO 9080, *Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation (ISO 9080:2003)*

EN ISO 13760, *Plastics pipes for the conveyance of fluids under pressure — Miner's rule — Calculation method for cumulative damage (ISO 13760:1998)*

EN ISO 15875-1, *Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) — Part 1: General (ISO 15875-1:2003)*

EN ISO 15875-2:2003, *Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) — Part 2: Pipes (ISO 15875-2:2003)*

EN ISO 15875-3, *Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) — Part 3: Fittings (ISO 15875-3:2003)*

EN ISO 15875-5:2003, *Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) — Part 5: Fitness for purpose of the system (ISO 15875-5:2003)*

EN ISO 15876-1, *Plastics piping systems for hot and cold water installations — Polybutylene (PB) — Part 1: General (ISO 15876-1:2003)*

EN ISO 15876-2, *Plastics piping systems for hot and cold water installations — Polybutylene (PB) — Part 2: Pipes (ISO 15876-2:2003)*

EN ISO 15876-3, *Plastics piping systems for hot and cold water installations — Polybutylene (PB) — Part 3: Fittings (ISO 15876-3:2003)*

EN ISO 15876-5, *Plastics piping systems for hot and cold water installations — Polybutylene (PB) — Part 5: Fitness for purpose of the system (ISO 15876-5)*

EN ISO 21003-2, *Multilayer piping systems for hot and cold water installations inside buildings — Part 2: Pipes (ISO 21003-2:2008)*

ISO 10147, *Pipes and fittings made of crosslinked polyethylene (PE-X) — Estimation of the degree of crosslinking by determination of the gel content*

ISO 17455, *Plastics piping systems — Multilayer pipes — Determination of the oxygen permeability of the barrier pipe*

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in [EN 15632-1:2009+A1:2014](#) apply.

## 4 Classification

### 4.1 Operating temperatures and service life

Pipe systems according to this European Standard are designed for a service life of at least 30 years when operated at the following temperature profile:

29 years at 80 °C + 1 year at 90 °C + 100 h at 95 °C.

Other temperature/time profiles can be applied in accordance with EN ISO 13760 (Miner's Rule). Further information is given in [EN 15632-2:2009+A1:2014](#), Annex A.

The maximum operating temperature shall not exceed 95 °C.

### 4.2 Operating pressures

Pipe systems according to this European Standard are designed for continuous operating pressures of 6, 8 or 10 bar. Table 1 defines maximum SDR ratios of the service pipe required to withstand the operating pressures.

**Table 1 —SDR ratios required for different operating pressures**

Service pipe	Operating Pressure		
	6 bar	8 bar	10 bar
PE-X	SDR 11	SDR 9	SDR 7.4
PB	SDR 13,6	SDR 11	SDR 9
Multilayer pipes	Wall thicknesses shall be calculated according to the methods defined in EN ISO 21003-2		

The SDR ratios in Table 1 are based on the regression curves of EN ISO 15875 and EN ISO 15876. Higher SDR ratios may be applied, if they are based on regression curves developed in accordance with EN ISO 9080.