

**Vedelike teisaldamiseks ettenähtud
termoplasttorud. Pragude kiirele
levimisele (RCP) vastupidavuse
kindlaksmääramine. Täisskaala katse
(FST)**

Thermoplastics pipes for the conveyance of fluids -
Determination of resistance to rapid crack
propagation (RCP) - Full-scale test (FST)

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 13478:2007 sisaldab Euroopa standardi EN ISO 13478:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 30.10.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 13478:2007 consists of the English text of the European standard EN ISO 13478:2007.</p> <p>This document is endorsed on 30.10.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p>Käsitlusala:</p> <p>Käesolev standard esitab täisskaala testimismeetodi termoplasttorus tekkinud pragunemise paigalhoidmise või leviku kindlaksmääramiseks kindlal temperatuuril sisemise surve juures. Standard kehtib gaaside või vedelikega varustamiseks ettenähtud termoplasttorude funktsioneerimise hindamiseks. Vedelikutorude korral võib torus olla ka õhku.</p>	<p>Scope:</p> <p>This International Standard specifies a full-scale test (FST) method for determining the arrest or propagation of a crack initiated in a thermoplastics pipe at a specified temperature and internal pressure. The method is also suitable for the determination of defined critical pressure, critical stress and critical temperature parameters. It is applicable to the assessment of the performance of thermoplastics pipes intended for the supply of gases or liquids. In the latter case, air could also be present in the pipe.</p>
--	---

ICS 23.040.20

Võtmesõnad: kindlaksmääramine, plasttorud, pragunemine (murdumine), pragunemismistugevus, pragunemistestid, prao levimine, termoplastvaigud, testimine, testimisaruanne, torud, vedelikutorustikud

English Version

Thermoplastics pipes for the conveyance of fluids -
Determination of resistance to rapid crack propagation (RCP) -
Full-scale test (FST) (ISO 13478:2007)

Tubes en matières thermoplastiques pour le transport des
fluides - Détermination de la résistance à la propagation
rapide de la fissure (RCP) - Essai grandeur nature (FST)
(ISO 13478:2007)

Rohre aus Thermoplasten für den Transport von Fluiden -
Bestimmung des Widerstandes gegenüber schneller
Rissfortpflanzung (RCP) - Praxistest (FS-Prüfung) (ISO
13478:2007)

This European Standard was approved by CEN on 30 June 2007.

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 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 Management Centre has the same status as the official versions.

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



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents	Page
Foreword.....	3

Foreword

This document (EN ISO 13478:2007) has been prepared by Technical Committee ISO/TC 138 "Plastics pipes, fittings and valves for the transport of fluids" in collaboration with Technical Committee CEN/TC 155 "Plastics piping systems and ducting systems" the secretariat of which is held by NEN.

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 February 2008, and conflicting national standards shall be withdrawn at the latest by February 2008.

This document supersedes EN ISO 13478:1997.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 13478:2007 has been approved by CEN as a EN ISO 13478:2007 without any modification.

**Thermoplastics pipes for the conveyance
of fluids — Determination of resistance to
rapid crack propagation (RCP) —
Full-scale test (FST)**

*Tubes en matières thermoplastiques pour le transport des fluides —
Détermination de la résistance à la propagation rapide de la fissure
(RCP) — Essai grandeur nature (FST)*



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2007

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	2
5 Principle	2
6 Test parameters	3
7 Materials	3
8 Apparatus	3
9 Test-pipe preparation	7
10 Conditioning and backfill	7
11 Test procedure	8
12 Validity of results	8
13 Test report	9
Annex A (normative) Determination of critical pressure (or hoop stress)	10
Annex B (normative) Determination of critical temperature	13
Bibliography	14

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 13478 was prepared by Technical Committee ISO/TC 138, *Plastics pipes, fittings and valves for the transport of fluids*, Subcommittee SC 5, *General properties of pipes, fittings and valves of plastic materials and their accessories — Test methods and basic specifications*.

This second edition cancels and replaces the first edition (ISO 13478:1997), which has been technically revised.

Introduction

Test methods that measure the resistance of internally pressurized plastics pipes to rapid fracture propagation (RCP) have been standardized: ISO 13477 ^[1] and this International Standard. The S4 method specified in ISO 13477 utilizes short lengths of pipe to determine a critical RCP pressure or temperature for the pipe. Longer pipes up to 20 m in length are the basis of this full-scale test (FST) method for measurement of these critical parameters. On the one hand, the S4 method uses internal baffles to prevent rapid decompression of the internal test pressure, thus ensuring that the high-speed crack tip is exposed to the full pipe pressure throughout the test. The FST, on the other hand, has no baffles installed and is more related to field service. The crack tip is subjected to a reducing pressure by decompression effects as the crack propagates. This arrangement reflects the RCP mode of failure of long pipelines and is assumed to be the reference test method. The critical RCP values derived from each test are different but can be correlated experimentally. A mathematical equation for correlation has been developed for polyethylene (PE) pipes (see ISO 13477).

Thermoplastics pipes for the conveyance of fluids — Determination of resistance to rapid crack propagation (RCP) — Full-scale test (FST)

1 Scope

This International Standard specifies a full-scale test (FST) method for determining the arrest or propagation of a crack initiated in a thermoplastics pipe at a specified temperature and internal pressure. The method is also suitable for the determination of defined critical pressure, critical stress and critical temperature parameters.

It is applicable to the assessment of the performance of thermoplastics pipes intended for the supply of gases or liquids. In the latter case, air could also be present in the pipe.

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.

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 3126, *Plastics piping systems — Plastics components — Determination of dimensions*

ISO 11922-1, *Thermoplastics pipes for the conveyance of fluids — Dimensions and tolerances — Part 1: Metric series*

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 11922-1 and the following apply.

3.1 critical pressure

p_c

highest crack-arrest pressure below the lowest crack-propagation pressure

3.2 critical hoop stress

σ_c

highest crack-arrest hoop stress below the lowest crack-propagation hoop stress

3.3 critical temperature

T_c

lowest crack-arrest temperature above the highest crack-propagation temperature