SLOVENSKI STANDARD
SIST EN 14814:2016

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Lepila za plastomerne cevne sisteme za tekočine pod tlakom - Specifikacije

Adhesives for thermoplastic piping systems for fluids under pressure - Specifications

Klebstoffe für Druckrohrleitungssysteme aus thermoplastischen Kunststoffen für Fluide - Festlegungen

Adhésifs pour systèmes de canalisations thermoplastiques pour liquides sous pression - Spécifications

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This European Standard was approved by CEN on 15 March 2016.

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

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Contents

Page

European foreword

This document (EN 14814:2016) has been prepared by Technical Committee CEN/TC 193 "Adhesives", the secretariat of which is held by AENOR.

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of an identical text or by endorsement, at the latest by November 2016, and conflicting national standards shall be withdrawn at the latest by February 2018.

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 14814:2007.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of basic work requirements of Regulation (EU) 305/2011.

For relationship with Regulation (EU) 305/2011, see informative Annex ZA, which is an integral part of this document.

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

This European Standard contains the requirements for adhesives for thermoplastic piping systems under pressure independent of piping system application. The existing system and application standards that specify parameters for adhesive joints in particular application areas and the test methods specified therein remain unchanged. The requirements referred to in these system standards concern temperature, pressure and standard life span of the piping system, and are applicable to all the components of the piping system for all the relevant dimensions that require specified application.

1 Scope

This European Standard specifies the requirements and test methods for adhesives used for joining the components of unplasticized poly(vinyl chloride) (PVC-U), chlorinated poly(vinyl chloride) (PVC-C), acrylonitrile-butadiene-styrene (ABS) and styrene copolymer blends (PVC+SAN) thermoplastic piping systems for fluids under pressure, independent of the application area.

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 923:2015, *Adhesives — Terms and definitions*

EN 1452 (all parts), *Plastics piping systems for water supply — Unplasticized poly(vinyl chloride) (PVC-U)*

EN ISO 9311-2, *Adhesives for thermoplastic piping systems - Part 2: Determination of shear strength (ISO 9311-2)*

EN ISO 9311-3, *Adhesives for thermoplastic piping systems - Part 3: Test method for the determination of resistance to internal pressure (ISO 9311-3)*

EN ISO 15493, *Plastics piping systems for industrial applications - Acrylonitrile-butadiene-styrene (ABS), unplasticized poly(vinyl chloride) (PVC-U) and chlorinated poly(vinyl chloride) (PVC-C) - Specifications for components and the system - Metric series (ISO 15493)*

EN ISO 15877 (all parts), *Plastics piping systems for hot and cold water installations — Chlorinated poly(vinyl chloride) (PVC-C) (ISO 15877, all parts)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923:2015 and the following apply.

3.1
diametral clearance
difference between the mean inside diameter (d_{sm}) of the socket and the mean outside diameter (d_{em}) of the pipe

3.2
Batch Release Test
BRT
test performed by the manufacturer on a batch of components

Note 1 to entry: The test needs to be satisfactorily completed before the batch can be released.

3.3
Type Test
TT
tests performed to prove that the material, component, joint or assembly is capable of conforming with the relevant requirements given in the System Standard

4 Product characteristics

4.1 General considerations

The manufacturer of the adhesive shall specify for which non-pressure system the adhesive is intended by reference to the appropriate standard as listed in Table 1.

Table 1 — Intended use standard list

PVC-U	EN 1452 (all parts)
PVC-C	EN ISO 15493; EN ISO 15877
ABS	EN ISO 15493
PVC+ABS	EN ISO 15493

When not otherwise mentioned, the test pieces shall fulfil the following requirements set in Tables 2 and 3:

Table 2 — Test pieces diametral clearance

Material	Diametral clearance mm
ABS	$\left(0,6\ ^{0}_{-0,1}\right)$
PVC-C	$\left(0,6\ ^{0}_{-0,1}\right)$
PVC-U	$\left(0,6\ ^{0}_{-0,1}\right)$
NOTE The value and tolerances proposed for PVC-C systems are not based on a wide experience. The proposed value, *0,6 mm*, seem to be the most adequate at the moment, but it will be followed closely throughout the implementation of this standard. Changes will be introduced, if necessary, in the future revision of this standard.	

Table 3 — Test pieces setting time

Material	Relative Humidity %	Setting time	Setting temperature °C
ABS	(50 ± 5)	1 h 24 h 480 h + 96 h	(23 ± 2) (23 ± 2) (23 ± 2) + (40 ± 2)
PVC-C	(50 ± 5)	1 h 24 h 480 h + 96 h	(23 ± 2) (23 ± 2) (23 ± 2) + (80 ± 2)
PVC-U	(50 ± 5)	1 h 24 h 480 h + 96 h	(23 ± 2) (23 ± 2) (23 ± 2) + (60 ± 2)
NOTE If the requirement for the shear strength test is satisfied within a reduced setting time as those described in Table 2, those can be used.			

The setting time shall be measured from the start of the application of the adhesive.

4.2 Resistance to pull out

The resistance to pull out is assessed by the measurement of the shear strength.

The shear strength obtained by using adhesives for thermoplastic piping systems under pressure shall comply with the requirements of 5.1 using pipe and fitting compatible with the claims of the adhesive suitability.

The adhesive joints on the test pieces shall be prepared according to the instructions recommended by the adhesive manufacturer.

4.3 Pressure resistance

The resistance for pressure resistance is assessed by the resistance to internal pressure.

The adhesive joints shall be prepared according to the instructions recommended by the adhesive manufacturer.

The adhesive joints shall be tested against pressure resistance in accordance with 5.2.

4.4 Resistance for high temperature

The resistance for high temperature is assessed by the resistance to internal pressure.

The adhesive joints shall be prepared according to the instructions recommended by the adhesive manufacturer.

The adhesive joints shall be tested against water leakage in accordance with 5.2.

4.5 Shelf life

Adhesive producers shall indicate the minimum shelf life of the adhesive when it is stored in unopened containers.

Shelf life of adhesives shall be assessed with the requirements of 5.3.

4.6 Release of dangerous substances

National regulations on dangerous substances may require verification and declaration on release, and sometimes content, when construction products covered by this standard are placed on those markets. In the absence of European harmonized test methods, verification and declaration on release/content should be done taking into account national provisions in the place of use.

NOTE An informative database covering European and national provisions on dangerous substances is available at the Construction website on EUROPA accessed through: http://ec.europa.eu/enterprise/construction/cpd-ds/.

4.7 Durability

The durability of tightness and resistance to high temperature of the adhesive joints shall comply with the requirements of 5.5.

5 Testing, assessment and sampling methods

5.1 Resistance to pull out

The adhesive shall be tested in accordance with EN ISO 9311-2 using pipe and fitting compatible with the claims of the adhesive suitability. The sampling procedure shall be defined by the manufacturer and the number of samples is one. The mean of the test results shall meet the requirements of Table 4.

Table 4 — Requirements for the shear strength

Material	Test temperature °C	Setting time	Requirements for shear strength MPa
ABS	(23 ± 2)	1 h	0,1
		24 h	1,5
		480 h + 96 h	5,0
PVC-C	(23 ± 2)	1 h	0,4
		24 h	1,5
		480 h + 96 h	10,0
PVC-U	(23 ± 2)	1 h	0,4
		24 h	1,5
		480 h + 96 h	7,0
NOTE The value and tolerances proposed for PVC-C systems are not based on a wide experience. The proposed values seem to be the most adequate at the moment, but they will be followed closely throughout the implementation of this standard. Changes will be introduced, if necessary, in the future revision of this standard.			

5.2 Pressure resistance

The adhesive shall be tested in accordance with EN ISO 9311-3 using pipe and fitting compatible with the claims of the adhesive suitability. The sampling procedure shall be defined by the manufacturer and the number of samples is one. The test results shall meet the requirements of Table 5.

Table 5 — Pressure resistance

Material	Setting time	Conditioning period (h)	Pressure conditions (Temperature °C)	Requirements for pressure resistance, h
ABS	480 h + 96 h	≥ 1	2,4 × PN[a] (20 ± 2)	≥ 1 000 h no leakage
PVC-C	480 h + 96 h	≥ 1	0,5 × PN (80 ± 2)	≥ 1 000 h no leakage
PVC-U in cold water applications	480 h + 96 h	≥ 1	3,2 × PN (20 ± 2)	≥ 1 000 h no leakage
			1,3 × PN (40 ± 2)	≥ 1 000 h no leakage
PVC-U in industrial applications	480 h + 96 h	≥ 1	3,2 × PN (20 ± 2)	≥ 1 000 h no leakage
			1,0 × PN[b] (60 ± 2)	≥ 1 000 h no leakage

[a] PN – Nominal pressure (MPa).

[b] To prevent deformation of the fitting during 60 °C test at PVC-U and 80 °C test at PVC-C it is recommended to use a fitting with greater wall thickness (e.g. use PN 16 fitting when tested for 10 PN) or to support the fitting.