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BSI Standards Publication

Adhesives for thermoplastic piping systems for fluids under pressure — Specifications

National foreword

This British Standard is the UK implementation of EN 14814:2016. It supersedes BS EN 14814:2007 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PRI/52, Adhesives.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Adhesives for thermoplastic piping systems for fluids under pressure - Specifications

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Klebstoffe für Druckrohrleitungssysteme aus thermoplastischen Kunststoffen für Fluide - Festlegungen

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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

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of an identical text or by endorsement, at the latest by November 2016, and conflicting national standards shall be withdrawn at the latest by February 2018.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

When the adhesive is specified for a piping system with conical fittings, these fittings shall be used for testing the internal pressure resistance. The inside diameter of the sockets shall be in accordance with the relevant standards.

5.3 Shelf life

The producer shall recheck the film properties (see Annex A) and the shear strength (setting time 24 h) of the adhesive after the recommended shelf life (minimum 12 months). The adhesive, stored in unopened containers in accordance with the manufacturer's instructions for the specified shelf life shall still meet the requirements of Table 4.

5.4 Release of dangerous substances

The release of dangerous substances shall comply with the existing national regulation.

5.5 Durability

The durability of tightness and resistance to high temperature of the adhesive joints is assessed by the internal pressure test and shall comply with 5.2.

6 Assessment and verification of constancy of performance — (AVCP)

6.1 General

The compliance of adhesives for thermoplastic piping systems under pressure with the requirements of this standard and with the performances declared by the manufacturer in the DoP shall be demonstrated by:

— determination of the product type;

— factory production control by the manufacturer, including product assessment.

The manufacturer shall always retain the overall control and shall have the necessary means to take responsibility for the conformity of the product with its declared performance(s).

6.2 Type testing

6.2.1 General

All performances related to characteristics included in this standard shall be determined when the manufacturer intends to declare the respective performances unless the standard gives provisions for declaring them without performing tests. (e.g. use of previously existing data, classified without further testing (CWFT) and conventionally accepted performance).

Assessment previously performed in accordance with the provisions of this standard, may be taken into account provided that they were made to the same or a more rigorous test method, under the same AVCP system on the same product or products of similar design, construction and functionality, such that the results are applicable to the product in question.

For the purposes of assessment, the manufacturer's products may be grouped into families, where it is considered that the results for one or more characteristics from any one product within the family are representative for that same characteristics for all products within that same family.

Products may be grouped in different families for different characteristics. Example: Products/Formulations which only differ in colour or slightly in viscosity can be considered as one product family.

Reference to the assessment method standards should be made to allow the selection of a suitable representative sample.

In addition, the determination of the product type shall be performed for all characteristics included in the standard for which the manufacturer declares the performance:

— at the beginning of the production of a new or modified adhesive for thermoplastic piping systems under pressure (unless a member of the same product range), or

— at the beginning of a new or modified method of production (where this may affect the stated properties); or

— they shall be repeated for the appropriate characteristic(s), whenever a change occurs in the adhesive for thermoplastic piping systems under pressure design, in the raw material or in the supplier of the components, or in the method of production (subject to the definition of a family), which would affect significantly one or more of the characteristics.

Where components are used whose characteristics have already been determined, by the component manufacturer, on the basis of assessment methods of other product standards, these characteristics need not be re-assessed. The specifications of these components shall be documented.

Products bearing regulatory marking in accordance with appropriate harmonized European specifications may be presumed to have the performances declared in the DoP, although this does not replace the responsibility on the adhesive for thermoplastic piping systems under pressure manufacturer to ensure that the adhesive for thermoplastic piping systems under pressure as a whole is correctly manufactured and its component products have the declared performance values.

6.2.2 Test samples, testing and compliance criteria

The number of samples of adhesives for thermoplastic piping systems under pressure to be tested/assessed shall be in accordance with Table 6.

Table 6 — Number of samples to be tested and compliance criteria

Characteristic	Requirement	Assessment method	No. of samples	Compliance criteria
Resistance to pull out at 1 h setting time (Shear strength)	4.2	5.1	One sample	See Table 4
Resistance to pull out at 24 h setting time (Shear strength)	4.2	5.1	One sample	See Table 4
Resistance to pull out at 480 h setting time (Shear strength)	4.2	5.1	One sample	See Table 4
Internal pressure	4.3	5.2	One sample	5.2
Resistance to high temperature	4.4	5.2	One sample	5.2
Shelf life	4.5	5.3	One sample	5.3 at producer's specified shelf life
Release of dangerous substances	4.6	5.4		Shall comply with existing national regulations
Durability	4.7	5.5	One sample	5.5

6.2.3 Test reports

The results of the determination of the product type shall be documented in test reports. All test reports shall be retained by the manufacturer for at least 10 years after the last date of production of the adhesive for thermoplastic piping systems under pressure to which they relate.

6.3 Factory production control (FPC)

6.3.1 General

The manufacturer shall establish, document and maintain an FPC system to ensure that the products placed on the market comply with the declared performance of the essential characteristics.

The FPC system shall consist of procedures, regular inspections and tests and/or assessments and the use of the results to control raw and other incoming materials or components, equipment, the production process and the product.

All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures.

This factory production control system documentation shall ensure a common understanding of the evaluation of the constancy of performance and enable the achievement of the required product performances and the effective operation of the production control system to be checked. Factory production control therefore brings together operational techniques and all measures allowing maintenance and control of the compliance of the product with the declared performances of the essential characteristics.

6.3.2 Requirements

6.3.2.1 General

The manufacturer is responsible for organizing the effective implementation of the FPC system in line with the content of this product standard. Tasks and responsibilities in the production control organization shall be documented and this documentation shall be kept up-to-date.

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting product constancy, shall be defined. This applies in particular to personnel that need to initiate actions preventing product non-constancies from occurring, actions in case of non-constancies and to identify and register product constancy problems.

Personnel performing work affecting the constancy of performance of the product shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

In each factory the manufacturer may delegate the action to a person having the necessary authority to:

— identify procedures to demonstrate constancy of performance of the product at appropriate stages;

— identify and record any instance of non-constancy;

— identify procedures to correct instances of non-constancy.

The manufacturer shall draw up and keep up-to-date documents defining the factory production control. The manufacturer's documentation and procedures should be appropriate to the product and manufacturing process. The FPC system should achieve an appropriate level of confidence in the constancy of performance of the product. This involves:

a) the preparation of documented procedures and instructions relating to factory production control operations, in accordance with the requirements of the technical specification to which reference is made;

b) the effective implementation of these procedures and instructions;

c) the recording of these operations and their results;

d) the use of these results to correct any deviations, repair the effects of such deviations, treat any resulting instances of non-conformity and, if necessary, revise the FPC to rectify the cause of non-constancy of performance.

Where subcontracting takes place, the manufacturer shall retain the overall control of the product and ensure that he receives all the information that is necessary to fulfill his responsibilities according to this European Standard.

If the manufacturer has part of the product designed, manufactured, assembled, packed, processed and/or labelled by subcontracting, the FPC of the subcontractor may be taken into account, where appropriate for the product in question.

The manufacturer who subcontracts all of his activities may in no circumstances pass the above responsibilities on to a subcontractor.

NOTE Manufacturers having an FPC system, which complies with EN ISO 9001 standard and which addresses the provisions of the present European Standard are considered as satisfying the FPC requirements of the Regulation (EU) No 305/2011.

6.3.2.2 Equipment

6.3.2.2.1 Testing

All weighing, measuring and testing equipment shall be calibrated and regularly inspected according to documented procedures, frequencies and criteria.

6.3.2.2.2 Manufacturing

All equipment used in the manufacturing process shall be regularly inspected and maintained to ensure use, wear or failure does not cause inconsistency in the manufacturing process. Inspections and maintenance shall be carried out and recorded in accordance with the manufacturer’s written procedures and the records retained for the period defined in the manufacturer's FPC procedures.

6.3.2.3 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their compliance. In case supplied kit components are used, the constancy of performance system of the component shall be that given in the appropriate harmonized technical specification for that component.

6.3.2.4 Traceability and marking

Individual adhesives for thermoplastic piping systems under pressure shall be identifiable and traceable with regard to their production origin. The manufacturer shall have written procedures ensuring that processes related to affixing traceability codes and/or markings are inspected regularly.

6.3.2.5 Controls during manufacturing process

The manufacturer shall plan and carry out production under controlled conditions.

6.3.2.6 Product testing and evaluation

The manufacturer shall establish procedures to ensure that the stated values of the characteristics he declares are maintained. The characteristics, and the means of control, are:

— resistance to pull out (shear strength) at 1 h setting time shall be subject to the tests indicated in 5.1, at least once every 10 batches as Batch Release Test and at least once a year;

— for the 1 h shear strength test as Batch Release Test, it is permitted to use only one test piece. If the result does not fulfil the specified requirement, this test shall be repeated and increase the number of test pieces to 3.

— resistance to pull out (shear strength) at 24 h setting time shall be subject to the tests indicated in 5.1, at least once a year;

— resistance to pull out (shear strength) at 480 h setting time: shall be subject to the tests indicated in 5.1, at least once a year ;

— pressure resistance (internal pressure): shall be subjected to the tests indicated in 5.2, at least one a year;

— shelf life: shall be subject to the tests indicated in 5.3, at least for the specified shelf life.

NOTE A list of other possible characterization tests is reviewed in Annex A.

6.3.2.7 Non-complying products

The manufacturer shall have written procedures which specify how non-complying products shall be dealt with. Any such events shall be recorded as they occur and these records shall be kept for the period defined in the manufacturer's written procedures.

Where the product fails to satisfy the acceptance criteria, the provisions for non-complying products shall apply, the necessary corrective action(s) shall immediately be taken and the products or batches not complying shall be isolated and properly identified.

Once the fault has been corrected, the test or verification in question shall be repeated.

The results of controls and tests shall be properly recorded. The product description, date of manufacture, test method adopted, test results and acceptance criteria shall be entered in the records under the signature of the person responsible for the control/test.

With regard to any control result not meeting the requirements of this European Standard, the corrective measures taken to rectify the situation (e.g. a further test carried out, modification of manufacturing process, throwing away or putting right of product) shall be indicated in the records.

6.3.2.8 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to prevent recurrence.

6.3.2.9 Handling, storage and packaging

The manufacturer shall have procedures providing methods of product handling and shall provide suitable storage areas preventing damage or deterioration.

6.3.3 Product specific requirements

The FPC system shall address this European Standard and ensure that the products placed on the market comply with the declaration of performance.

The FPC system shall include a product specific FPC, which identifies procedures to demonstrate compliance of the product at appropriate stages, i.e.:

a) the controls and tests to be carried out prior to and/or during manufacture according to a frequency laid down in the FPC test plan,

   and/or

b) the verifications and tests to be carried out on finished products according to a frequency laid down in the FPC test plan.

If the manufacturer uses only finished products, the operations under b) shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

If the manufacturer carries out parts of the production himself, the operations under b) may be reduced and partly replaced by operations under a). Generally, the more parts of the production that are carried out by the manufacturer, the more operations under b) may be replaced by operations under a).

In any case the operation shall lead to an equivalent level of compliance of the product as if FPC had been carried out during the production.

NOTE Depending on the specific case, it can be necessary to carry out the operations referred to under a) and b), only the operations under a) or only those under b).

The operations under a) refer to the intermediate states of the product as on manufacturing machines and their adjustment, and measuring equipment, etc. These controls and tests and their frequency shall be chosen based on product type and composition, the manufacturing process and its complexity, the sensitivity of product features to variations in manufacturing parameters, etc.

The manufacturer shall establish and maintain records that provide evidence that the production has been sampled and tested. These records shall show clearly whether the production has satisfied the defined acceptance criteria and shall be available for at least three years.

6.3.4 One-off products, pre-production products (e.g. prototypes) and products produced in very low quantity

The adhesives for thermoplastic piping systems under pressure produced as a one-off, prototypes assessed before full production is established, and products produced in very low quantities (less than one ton) per year shall be assessed as follows.

For type assessment, the provisions of 6.2.1, 3rd paragraph apply, together with the following additional provisions:

— in case of prototypes, the test samples shall be representative of the intended future production and shall be selected by the manufacturer;

— on request of the manufacturer, the results of the assessment of prototype samples may be included in a certificate or in test reports issued by the involved third party.

The FPC system of one-off products and products produced in very low quantities shall ensure that raw materials and/or components are sufficient for production of the product. The provisions on raw materials and/or components shall apply only where appropriate. The manufacturer shall maintain records allowing traceability of the product.

For prototypes, where the intention shall move to series production, the initial inspection of the factory and FPC shall be carried out before the production is already running and/or before the FPC is already in practice. The following shall be assessed:

— the FPC-documentation; and

— the factory.

In the initial assessment of the factory and FPC it shall be verified:

a) that all resources necessary for the achievement of the product characteristics included in this European Standard will be available, and

b) that the FPC-procedures in accordance with the FPC-documentation will be implemented and followed in practice, and

c) that procedures are in place to demonstrate that the factory production processes can produce a product complying with the requirements of this European Standard and that the product will be the same as the samples used for the determination of the product type, for which compliance with this European Standard has been verified.

Once series production is fully established, the provisions of 6.3 shall apply.

7 Marking, labelling and packaging

Each container of adhesive shall be clearly marked by the manufacturer either directly on the container or by an adhesive label with at least the following information:

a) manufacturer's or supplier's name and the trademark or identification mark of the adhesive;

b) number of this European Standard, EN 14814;

c) field of application: Adhesives for thermoplastic piping systems under pressure;

d) list of the thermoplastics piping systems standards for which the adhesive is suitable;

e) instructions for use and storage of the adhesive;

f) any safety precautions relating to use and storage;

g) batch number from which the container was filled;

h) date of manufacturing and a statement to the effect that the adhesive has a shelf life of minimum 12 months or “use before date” when stored in unopened containers in accordance with the manufacturer's instructions;

i) where regulatory marking provisions require information on some or all items listed in this clause, the provisions of this clause concerning those common items are deemed to be met.

Annex A
(informative)

Additional characterization for adhesives for thermoplastic piping systems under pressure

Properties declared in Table A.1 may be used for monitoring manufacturing control and characterization of the adhesives for thermoplastic piping systems under pressure.

Table A.1 — List of additional characterization test methods and a suggested test frequency for adhesives for thermoplastic piping systems under pressure

Nº	Properties to be assess	Test method	BRT	TT
1	Density	EN 542	o	+
2	Solid content	EN 827	+	o
3	Viscosity	EN 12092	+	o
4	Film properties	EN ISO 9311-1	o	+
(o) not to be performed; (+) to be performed.				

All test methods mentioned in Table A.1 are suitable for solvent based adhesives.

For non-solvent adhesives the above test methods may be used if the specific test method is suitable. If the specified test methods cannot be used, the non-solvent based adhesive shall be characterized using other tests methods appropriate to the nature of the adhesive.

NOTE In this annex it is not possible to specify properties and test methods for non-solvent based adhesives because the nature (epoxy, acrylic, hot melt, etc) of the adhesive is unknown. Depending on the chemical basis of the non-solvent based adhesive, characterizing properties such as epoxy equivalent, open time, pot life, etc, may be necessary.

Annex ZA
(informative)

Clauses of this European Standard addressing the provisions of the EU Construction Products Regulation

ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M 131 "Pipes, tanks and ancillaries not in contact with water intended for human consumption" given to CEN by the European Commission and the European Free Trade Association.

If this European Standard is cited in the Official Journal of the European Union (OJEU), the clauses of this standard, shown in this annex, are considered to meet the provisions of the relevant mandate, under the Regulation EU) No. 305/2011.

This annex deals with the CE marking of the adhesives for thermoplastic piping systems under pressure intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as in Clause 1 of this standard related to the aspects covered by the mandate and is defined by Table ZA.1.

Table ZA.1 — Relevant clauses for adhesives for thermoplastic piping systems under pressure

Product:	Adhesives for thermoplastic piping systems
Intended use:	Adhesives for thermoplastic piping systems under pressure in installations for the transport/disposal/storage of water not intended for human consumption

Essential Characteristics	Requirement and clauses in this European Standard	Regulatory classes	Notes
Resistance to pull out	4.2		Expressed as shear strength at 1 h, 24 h and 480 h setting time
Internal pressure	4.3		No leakage
Resistance to high temperature	4.4		No leakage
Release of dangerous substances	4.6		
Durability	4.7		No leakage

The declaration of the product performance related to certain essential characteristics is not required in those Member States (MS) where there are no regulatory requirements on these essential characteristics for the intended use of the product.

In this case, manufacturers placing their products on the market of these MS are not obliged to determine nor declare the performance of their products with regard to these essential characteristics and the option "No performance determined" (NPD) in the information accompanying the CE marking and in the declaration of performance (see ZA.3) may be used for those essential characteristics.

ZA.2 Procedure for AVCP of adhesives for thermoplastic piping systems under pressure

ZA.2.1 System(s) of AVCP

The AVCP system of adhesives for thermoplastic piping systems under pressure indicated in Table ZA.1, established by EC Decision 1999/472/EC (OJEU L184 of 17.7.1999) as amended by EC Decision 20001/596/EC (OJEU L209 of 2.8.2001) is shown in Table ZA.2 for the indicated intended use and relevant level or class of performance.

Table ZA.2 — System of AVCP

Product	Intended use	Level or class of performance	AVCP system(s)
Adhesives for thermoplastic piping system under pressure	In installations for the transport/disposal/storage of water not intended for human consumption		4
System 4: See Regulation (EU) No. 305/2011 (CPR) Annex V, 1.5.			

The AVCP of the adhesives for thermoplastic piping systems under pressure in Table ZA.1 shall be according to the AVCP procedures indicated in Table ZA.3 resulting from application of the clauses of this or other European Standard indicated therein. The content of tasks of the notified body shall be limited to those essential characteristics as provided for, if any, in Annex III of the relevant mandate and to those that the manufacturer intends to declare.

Table ZA.3 — Assignment of AVCP tasks for adhesives for thermoplastic piping systems under pressure under system 4

Tasks		Content of the task	AVCP clauses to apply
Tasks for the manufacturer	Factory production control (FPC)	Parameters related to shear strength of Table ZA.1 relevant for the intended use	6.3
	Determination of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product	All relevant characteristics of Table ZA.1 relevant for the intended use which are declared	6.2

ZA.2.2 Declaration of performance (DoP)

ZA.2.2.1 General

The manufacturer draws up the DoP and affixes the CE marking on the basis of the different AVCP systems set out in Annex V of the Regulation (EU) No 305/2011:

— the factory production control carried out by the manufacturer;

— the determination by the manufacturer of the product-type on the basis of type testing, type calculation, tabulated values or descriptive documentation of the product.

ZA.2.2.2 Content

The model of the DoP is provided in Annex III of the Regulation (EU) No 305/2011.

According to this Regulation, the DoP shall contain, in particular, the following information:

— the reference of the product-type for which the declaration of performance has been drawn up;

— the AVCP system or systems of the construction product, as set out in Annex V of the CPR;

— the reference number and date of issue of the harmonized standard which has been used for the assessment of each essential characteristic;

— where applicable, the reference number of the Specific Technical Documentation used and the requirements with which the manufacturer claims the product complies.

The DoP shall in addition contain:

a) the intended use or uses for the construction product, in accordance with the applicable harmonized technical specification;

b) the list of essential characteristics, as determined in the harmonized technical specification for the declared intended use or uses;

c) the performance of at least one of the essential characteristics of the construction product, relevant for the declared intended use or uses;

d) where applicable, the performance of the construction product, by levels or classes, or in a description, if necessary based on a calculation in relation to its essential characteristics determined in accordance with the Commission determination regarding those essential characteristics for which the manufacturer shall declare the performance of the product when it is placed on the market or the Commission determination regarding threshold levels for the performance in relation to the essential characteristics to be declared.

e) the performance of those essential characteristics of the construction product which are related to the intended use or uses, taking into consideration the provisions in relation to the intended use or uses where the manufacturer intends the product to be made available on the market;

f) for the listed essential characteristics for which no performance is declared, the letters “NPD” (No Performance Determined);

Regarding the supply of the DoP, Article 7 of the Regulation (EU) No 305/2011 applies.

The information referred to in Article 31 or, as the case may be, in Article 33 of Regulation (EC) No 1907/2006, (REACH) shall be provided together with the DoP.

ZA.2.2.3 Example of DoP

The following gives an example of a filled-in DoP for adhesives for pressure PVC U piping systems:

DECLARATION OF PERFORMANCE

Number (to be given by the manufacturer)

1) Unique identification code of the product-type:

TRADE MARK

2) Intended use/es:

Adhesive for thermoplastic piping systems under pressure in installations for the transport/disposal/storage of water not intended for human consumption

3) Manufacturer:

Trademark

AnyCo SA,

PO Box 21

B-1050 Brussels, Belgium

Tel. +32987654321

Fax: +32123456789

Email: anyco.sa@provider.be

4) Authorized representative (if applicable):

Anyone Ltd

Flower Str. 24

West Hamfordshire

UK-589645 United Kingdom

Tel. +44987654321

Fax: +44123456789

e-mail: anyone.ltd@provider.uk

5) System of assessment and verification of constancy of performance (AVCP):

System 4

6) Harmonized standard:

EN 14814:2016

7) Declared performance (example adapted for PVC-U adhesives for pressure applications)

Essential characteristics	Performance	Harmonized technical specification
Resistance to pull out (shear strength at 1 h setting time)	≥ 0,40 MPa	EN 14814:2016
Resistance to pull out (shear strength at 24 h time)	≥ 1,5 MPa	
Resistance to pull out (shear strength at 480 h + 96 h setting time)	≥ 7,0 MPa	
Pressure resistance (internal pressure at (20 ± 2) °C at 51,2 bar)	≥ 1000 h No leakage	EN 14814:2016
Pressure resistance (internal pressure at (40 ± 2) °C at 20,8 bar)	≥ 1000 h No leakage	EN 14814:2016
Resistance to high temperature (internal pressure at (40 ± 2) °C at 20,8 bar)	≥ 1000 h No leakage	EN 14814:2016
Release of dangerous substances	NPD	
Durability on tightness and temperature resistance	No leakage	EN 14814:2016

The performance of the product identified above is in conformity with the set of declared performance/s. This declaration of performance is issued, in accordance with Regulation (EU) No 305/2011, under the sole responsibility of the manufacturer identified above. Signed for and on behalf of the manufacturer by:

[*name*] ……

At [*place*] …… on [*date of issue*] ……..

[*signature*] ……

ZA.3 CE marking and labelling

The CE marking symbol shall be in accordance with the general principles set out in Article 30 of Regulation (EC) No 765/2008 and shall be affixed visibly, legibly and indelibly:

to the packaging, together with:

— the last two digits of the year in which it was first affixed;

— the reference number of the declaration of performance;

— the reference to this harmonized European Standard.

Figure ZA.1 gives an example of the information related to adhesives for thermoplastic piping systems under pressure subject to AVCP to be given on the on the adhesive packaging.

CE	*CE marking, consisting of the "CE"-symbol*
16	*Last two digits of the year in which the marking was first affixed*
00001-CPR-2013/05/12	*Reference number of the DoP*
EN 14814	*No. of European Standard applied, as referenced in OJEU*

Figure ZA.1 — Example CE marking information on adhesive packaging

to the accompanying documents, together with:

— the last two digits of the year in which it was first affixed;

— the name and the registered address of the manufacturer, or the identifying mark allowing identification of the name and address of the manufacturer easily and without any ambiguity;

— the reference number of the declaration of performance;

— the reference to this harmonized European Standard;

— the unique identification code of the product-type;

— the intended use as laid down in the harmonized technical specification applied;

— the level or class of the performance declared.

The CE marking shall be affixed before the construction product is placed on the market. It may be followed by a pictogram or any other mark notably indicating a special risk or use.

Figure ZA.2 gives an example of the information related to adhesives for thermoplastic piping systems under pressure subject to AVCP to be given on the on the accompanying commercial documents.

CE	*CE marking, consisting of the "CE"-symbol*
15 **AnyCo Ltd, PO Box 21, B-1050, Brussels, Belgium** 00001-CPR-2013/05/12	*Last two digits of the year in which the marking was first affixed* *Name and the registered address of the manufacturer, or identifying mark* *Reference number of the DoP*
EN 14814	*No. of European Standard applied, as referenced in OJEU*
PVC-U Adhesive for thermoplastic piping systems under pressure In installations for the transport/disposal/storage of water not intended for human consumption Resistance to pull out ≥ 7,0 MPa (N/mm²) at 480 h +96 h Resistance to pull out ≥ 1,5 MPa (N/mm²) at 24 h Resistance to pull out ≥ 0,40 MPa (N/mm²) at 1 h Tightness No leakage Resistance to high temperature No leakage Release of dangerous substances NPD Durability No leakage	*Unique identification code of the product-type* *Intended use of the product as laid down in the European Standard applied* *Level or class of the performance declared*

Figure ZA.2 — Example CE marking information on accompanying commercial documents

Bibliography

[1] EN 542, *Adhesives - Determination of density*

[2] EN 827, *Adhesives - Determination of conventional solids content and constant mass solids content*

[3] EN 12092, *Adhesives - Determination of viscosity*

[4] EN ISO 9001, *Quality management systems — Requirements (ISO 9001)*

[5] EN ISO 9311-1, *Adhesives for thermoplastic piping systems - Part 1: Determination of film properties (ISO 9311-1)*

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