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Adhesives for thermoplastic piping systems for fluids under pressure - Specifications

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

Klebstoffe für Druckrohrleitungssysteme aus thermoplastischen Kunststoffen für Fluide - Festlegungen

This European Standard was approved by CEN on 29 December 2006.

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

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Foreword

This document (EN 14814:2007) 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of an identical text or by endorsement, at the latest by August 2007, and conflicting national standards shall be withdrawn at the latest by November 2008.

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 EU Directive(s).

For relationship with EU Directive(s), 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, 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.

Introduction

This product standard contains the requirements for adhesives for thermoplastic piping systems under pressure independent of piping system application. The existing system and application standards which 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 are required in the specified application.

This product standard completes the characterisation of the adhesives for thermoplastic piping systems in conjunction with another product standard EN 14680 "Adhesives for non-pressure thermoplastic piping systems - Specifications". These product standards are supported by standard test methods to which references are made through the texts.

Safety Statement

Persons using this document should be familiar with the normal laboratory practice, if applicable. This document does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user to establish appropriate safety and health practices and to ensure compliance with any regulatory conditions.

1 Scope

This European Standard specifies the functional requirements and test methods for adhesives used for joining the components of unplasticised poly(vinyl chloride) (PVC-U), chlorinated poly(vinyl chloride) (PVC-C), acrylonitrile -butadiene-styrene (ABS) thermoplastic piping systems for fluids under pressure.

It provides for the evaluation of conformity of the adhesive for this EN.

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 923:2005, *Adhesives - Terms and definitions*

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

EN ISO 9001:2000 , *Quality management systems - Requirements (ISO 9001:2000)*

EN ISO 9311-1, *Adhesives for thermoplastic piping systems - Part 1: Determination of film properties (ISO 9311-1:2005)*

EN ISO 9311-2*, Adhesives for thermoplastic piping systems - Part 2: Determination of shear strength (ISO 9311-2:2002)*

EN ISO 9311-3, *Adhesives for thermoplastic piping systems - Part 3: Test method for the determination of resistance to internal pressure (ISO 9311-3:2005)*

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 15493:2003)*

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 923:2005 and the following apply.

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

3.2
Definitions related to assessment of conformity

3.2.1
conformity assessment
any activity concerned with determining directly or indirectly that relevant requirements are fulfilled

[EN 45020:2006]

3.2.2
Batch Release Test (BRT)
test performed by the manufacturer on a batch of components, which has to be satisfactorily completed before the batch can be released

[EN 13566-1:2002]

3.2.3
Initial Type Test (ITT)
complete set of test or other procedures, determining the performance of samples of products representative of the product type

3.2.4
Type Test (TT)
test performed to prove that the material, component, joint or assembly is capable of conforming with the relevant requirements given in the System Standard

[CEN ISO/TS 15874-7:2003]

4 Requirements

4.1 General consideration

The manufacturer of the adhesive shall specify for which pressure system the adhesive is intended to be used, e.g. PVC-U for water supply (see EN 1452 series), ABS, PVC-U or PVC-C for industrial applications (see EN ISO 15493) or PVC-C for hot and cold water installations (see EN ISO 15877).

Unless otherwise specified in this clause, the test pieces shall fulfil the following requirements set in Tables 1 and 2:

Table 1 — Diametric clearance

Material	Diametric 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 2 — 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)

Setting time shall be measured from the beginning of the application of the adhesive.

4.2 Shear strength

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 mean of the test results shall meet the requirements of Table 3.

Table 3 — Shear strength

Material	Test temperature °C	Setting time	Requirements for shear strength MPa
ABS	(23 ± 2)	1 h 24 h 480 h + 96 h	0,1 1,5 5,0
PVC-C	(23 ± 2)	1 h 24 h 480 h + 96 h	0,4 1,5 10,0
PVC-U	(23 ± 2)	1 h 24 h 480 h + 96 h	0,4 1,5 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.			

4.3 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 test results shall meet the requirements of Table 4.

Table 4 — 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 x PN[c] (20 ± 2)	≥ 1 000 h no leakage
PVC-C[a]	480 h + 96 h	≥ 1	0,5 x PN (80 ± 2)	≥ 1 000 h no leakage
PVC-U in cold water applications	480 h + 96 h	≥ 1	3,2 x PN (20 ± 2)	≥ 1 000 h no leakage
			1,3 x PN (40 ± 2)	≥ 1 000 h no leakage
PVC-U in industrial applications	480 h + 96 h	≥ 1	3,2 x PN (20 ± 2)	≥ 1 000 h no leakage
			1,0 x PN [b] (60 ± 2)	≥ 1 000 h no leakage

[a] 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.

[b] To prevent deformation of the fitting during 60 °C test at PVC-U 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.

[c] PN – Nominal pressure (MPa).

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.

4.4 Shelf life

The adhesive, stored in unopened containers in accordance with the manufacturer's instructions for the specified shelf life shall still meet the requirements in Table 3 at a setting time of 1 day and conform to the manufacturers specifications for application properties.

5 Evaluation of conformity

5.1 General

The conformity of the adhesives for pressure thermoplastic piping systems to the requirements of this standard and with the stated values shall be demonstrated by:

- initial type testing;
- factory production control by the manufacturer, including product assessment;
- batch release test.

5.2 Initial type testing

5.2.1 General

Initial type testing shall be performed at the beginning of the production of a new adhesive for thermoplastic piping systems or at the beginning of a new method of production (where this may affect the stated properties).

Historical data may be used insofar as tests previously performed on the same adhesive in accordance with the provisions of this standard (same characteristic(s), test method, sampling procedure, system of attestation of conformity, etc.) may be taken into account.

5.2.2 Characteristics

All characteristics in Table 5 shall be subject to initial type testing.

Table 5 — Characteristics to be assessed in initial and surveillance testing

Characteristic	Test method	Requirements
Shear strength at 480 h+ 96 h setting time with temperatures depending on the material (see Table 2)	EN ISO 9311-2	4.2
Shear strength at 24 h setting time	EN ISO 9311-2	4.2
Shear strength at 1 h setting time	EN ISO 9311-2	4.2
Pressure resistance	EN ISO 9311-3	4.3
Shelf life	EN ISO 9311-1 EN ISO 9311-2	4.4

The results of all initial type tests shall be recorded and held by the manufacturer for at least ten years after the product for which the ITT is representative ceases production (see 5.2.1).

5.2.3 Sampling, testing and conformity criteria

5.2.3.1 Sampling

Initial type testing shall be performed on samples of adhesives for thermoplastic piping systems representative for the manufactured adhesive type.

5.2.3.2 Conformity criteria

For the conformity with the requirements of this standard, all test results shall equal or exceed the values for the test.

5.3 Factory production control (FPC)

5.3.1 General

The manufacturer shall establish, document and maintain an FPC system.

If the manufacturer has the component designed, manufactured, assembled, packed, processed and labelled by subcontracting, FPC of the original manufacturer may be taken into account. However, where subcontracting takes place, the manufacturer shall retain the overall control of the component and ensure that he receives all the information that is necessary to fulfil his responsibilities according to this European Standard. The manufacturer who subcontracts all of his activities may in no circumstances discharge himself of his responsibilities to a subcontractor.

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 production control system documentation shall ensure a common understanding of conformity evaluation and enable the achievement of the required component characteristics 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 conformity of the component with its technical specifications. Its implementation may be achieved by controls and tests on measuring equipment, raw materials and constituents, processes, machines and manufacturing equipment and finished components, including material properties in components, and by making use of the results thus obtained.

5.3.2 General requirements

5.3.2.1 Introduction

A manufacturer‘s FPC system shall ensure that the products placed on the market conform to the declared performance characteristics. The FPC system shall consist of written procedures (works' manual), 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. Records shall remain legible, readily identifiable and retrievable.

An FPC system conforming with the requirements of EN ISO 9001, and made specific to the requirements of this standard, shall be considered to satisfy the above requirements.

The results of inspections, tests or assessments requiring action shall be recorded, as shall any action taken. The action to be taken when control values or criteria are not met shall be recorded and retained for the period specified in the manufacturer’s FPC procedures.

5.3.2.2 Personnel

The responsibility, authority and the relationship between personnel that manages, performs or verifies work affecting product conformity, shall be defined. This applies in particular to personnel that needs to initiate actions preventing product non-conformities from occurring, actions in case of non-conformities and to identify and register product conformity problems. Personnel performing work affecting product conformity shall be competent on the basis of appropriate education, training, skills and experience for which records shall be maintained.

5.3.2.3 Equipment

All weighing, measuring and testing equipment necessary to achieve, or produce evidence of, conformity shall be calibrated or verified and regularly inspected according to documented procedures, frequencies and criteria. Control of monitoring and measuring devices shall comply with the appropriate clause of EN ISO 9001.

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.

5.3.3 FPC requirements for all manufacturers

5.3.3.1 Raw materials and components

The specifications of all incoming raw materials and components shall be documented, as shall the inspection scheme for ensuring their conformity. The verification of conformity of the raw material with the specification shall be in accordance with EN ISO 9001:2000, 7.4.3.

5.3.3.2 In-process control

The manufacturer shall plan and carry out production under controlled conditions. Compliance with EN ISO 9001:2000, 7.5.1 and 7.5.2 shall be deemed to satisfy the requirements of this sub-clause.

5.3.3.3 Non-conforming products

The manufacturer shall have written procedures which specify how non-conforming 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. Compliance with EN ISO 9001:2000, 8.3 shall be deemed to satisfy the requirements of this sub-clause.

5.3.3.4 Corrective action

The manufacturer shall have documented procedures that instigate action to eliminate the cause of non-conformities in order to prevent recurrence. Compliance with EN ISO 9001:2000, 8.5.2 shall be deemed to satisfy the requirements of this sub-clause.

5.3.3.5 Handling, storage and packaging

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

5.3.3.6 Sampling

The manufacturer shall establish procedures to ensure that the stated values of all of the characteristics are maintained.

The manufacturer may use any appropriate testing of samples for the purposes of FPC providing that such tests and the sampling regime is documented in his FPC procedures, has an identifiable correlation with the test used for ITT and provides a satisfactory confidence in the conformity of the adhesive with the performance achieved for ITT.

The manufacturer shall specify a batch or a lot size in his FPC procedures.

A batch or lot shall only be released for supply when the characteristics in Table 6 have been carried out and the requirements have been conformed to.

Table 6 — Batch release test to be assessed

Characteristic	Test method	Requirements
Shear strength at 1 h setting time	EN ISO 9311-2	4.2

If the shear strength will be tested as a BRT, one test assembly instead of five will be sufficient. If the result does not fulfil the specified requirement, this test shall be repeated and increase the number of test pieces to 3.

A list of other possible characterisation tests is reviewed in Annex A.

All characteristics where initial type testing was on the basis of testing (Table 5) shall be subject to the tests at least once per year.

The manufacturer shall record the results of the production control (manufacturer's record). These records shall include at least the following:

a) identification of the product tested;

b) the dates of sampling;

c) the test methods applied;

d) the test and inspection results;

e) the date of the tests;

f) the identification of the responsible authority within the manufacturer;

g) calibration records.

Unless otherwise specified all records shall be maintained for a minimum of ten years.

6 Marking

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) The manufacturer's or supplier's name and the trade mark or identification mark of the adhesive;

b) The number of this European Standard, EN 14814;

c) Field of application: Adhesives for thermoplastic piping systems for fluids under pressure not in contact with potable water;

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

e) The instructions for use and storage of the adhesive;

f) Any safety precautions relating to use and storage;

g) The batch number from which the container was filled;

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

Annex A
(informative)

Possible characterization test methods for adhesives for thermoplastic piping systems

Table A.1 — List of possible characterisation test methods and a suggested test frequency for adhesives for thermoplastic piping systems

No.	Properties to be assessed	Test method	BRT	ITT
1	Density	EN 542	0	+
2	Solid content	EN 827	+	0
3	Viscosity	EN 12092	+	0
4	Film properties	EN ISO 9311-1	0	+
5	Thermal stability[a]	EN ISO 15908	0	+

Legend: (+) to be performed (0) not to be performed

[a]Testing thermal stability is only applicable for PVC-C adhesives.

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

For non-solvent adhesives the above test methods can be used if the specific test method is suitable. If the specified test methods cannot be used, the non-solvent based adhesive shall be characterised using other tests methods.

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, characterising properties such as epoxy equivalent, open time, pot life, etc, may be necessary.

Annex ZA
(informative)

Relationship between this European Standard and the Essential Requirements of EU Directive 89/106/EEC, EU Construction Products Directive

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.

The clauses of this European Standard shown in this annex meet the requirements of the Mandate given under the EU Construction Products Directive (89/106/EEC).

Compliance with these clauses confers a presumption of fitness of the adhesive for thermoplastic piping systems covered by this annex for their intended uses indicated herein; reference shall be made to the information accompanying the CE marking.

WARNING —Other requirements and other EU Directives, not affecting the fitness for intended use, can be applicable to the adhesives for thermoplastic piping systems falling within the scope of this standard.

NOTE 1 In addition to any specific clauses relating to dangerous substances contained in this standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

NOTE 2 An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (accessed through http://europa.eu.int/comm/enterprise/construction/internal/dangsub/dangmain.htm).

This annex has the same scope as Clause 1 of this standard with regard to the products covered. It establishes the conditions for the CE marking of adhesives for thermoplastic piping systems intended for the use indicated below and shows the relevant clauses applicable (see Table ZA.1).

Construction Product: Adhesives for thermoplastic piping systems for fluids under pressure.

Intended uses: To join the components of thermoplastic piping systems for aqueous fluids under pressure and not in contact with water intended for human consumption.

The requirement on a certain characteristic is not applicable in those Member States where there are no regulatory requirements on that characteristic for the intended end use of the product. In this case, manufacturers placing their products on the market of these Member States are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option “No performance determined” (NPD) in the information accompanying the CE marking (see Clause ZA.3) may be used. The NPD option may not be used, however, where the characteristic is subject to a threshold level.

Table ZA.1 —Relevant Clauses

Essential characteristics	Requirement clause in this (or other) EN	Levels and/or Classes	Notes
Internal pressure (Pressure resistance)	4.3		Min threshold ≥ 1000 h (Gives an indication of durability in service)
Resistance to pull out (Shear strength)	4.2		pass/fail
Tightness (Pressure resistance)	4.3		(Gives an indication of durability in service)
Resistance to high temperature (Pressure resistance)	4.3		(Gives an indication of durability in service)

ZA.2 Procedure(s) for the attestation of conformity of adhesives for thermoplastic piping systems for fluids under pressure

ZA.2.1 Systems of attestation of conformity

The system(s) of attestation of conformity of the adhesive for thermoplastic piping systems indicated in Table ZA.1 in accordance with the Decision of the Commission 99/472/EC as given in Annex III of the mandate for Mandate M/131 “Pipes, tanks and ancillaries not in contact with water intended for human consumption, is shown in Table ZA.2 for the indicated intended use.

Table ZA.2 —Attestation of conformity systems

Product	Intended use	Level(s) or class(es)	Attestation of conformity system
Adhesive for thermoplastic piping system for fluids under pressure	In installations for the transport/disposal/storage of water not intended for human consumption	-	4
System 4: See Directive 89/106/EEC (CPD) Annex III.2.(ii), Third possibility			

The attestation of conformity of the adhesives for thermoplastic piping systems for fluids under pressure in Table ZA.1 shall be according to the evaluation of conformity procedures indicated in Table ZA.3 resulting from the application of the clauses of this European Standard indicated therein.

Table ZA.3 —Assignment of evaluation of conformity tasks (for system 4)

Tasks		**Content of the task**	**Evaluation of conformity clauses to apply**
Tasks under the responsibility of the manufacturer	Factory production control (FPC).	Parameters relating to shear strength and pressure resistance.	5.3
	Initial type testing by the manufacturer	All characteristics of Table ZA.1	5.2

ZA.2.2 Declaration of conformity

When compliance with this annex is achieved, the manufacturer or his agent established in the EEA, shall prepare and retain a declaration of conformity, which entitles the manufacturer to affix the CE marking. This declaration shall include:

- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;
- description of the product (type, identification, use, ...), and a copy of the information accompanying the CE marking;
- provisions to which the product conforms (e.g. Annex ZA of this EN);
- particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions, etc);
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or his authorised representative.

The above mentioned declaration and certificate shall be presented in the official language or languages of the Member State in which the product is to be used.

ZA.3 CE Marking

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE marking symbol shall be in accordance with Directive 93/68/EEC and shall be shown on the adhesive packaging (or when not possible it may be on the accompanying label or on the accompanying commercial documents). The following information and characteristics shall accompany the CE marking symbol:

- name or identifying mark and address of the manufacturer or company responsible to bring the product to the market;
- the last two digits of the year in which the CE marking is affixed;
- reference to this European Standard (EN 14814:2007);
- description of the product: PN (nominal pressure) for which the adhesive is intended.

— information on those relevant essential characteristics listed in Table ZA.1 which are to be declared

  — declared values, “pass” for pass/fail requirements for each essential characteristic as indicated in "Notes" in Table ZA.1,

  — “No performance determined” for characteristics where this is relevant,

— The “No performance determined” (NPD) option may not be used where the characteristic is subject to a threshold level. Otherwise, the NPD option may be used when and where the characteristic, for a given intended use, is not subject to regulatory requirements in the Member State of destination.

Figure ZA.1 gives an example of the information to be given on adhesive packaging (or when not possible it may be on the accompanying label or on the accompanying commercial documents).

CE	*CE conformity marking, consisting of the “CE”-symbol given in Directive 93/68/EEC.*
AnyCo Ltd, PO Box 21, B-1050 **07**	*Name or identifying mark and registered address of the producer* *Last two digits of the year in which the CE marking was affixed*
EN 14814 PVC-U Adhesive for thermoplastic piping systems for fluids under pressure (PN XX) In installations for the transport/disposal/storage of water not intended for human consumption Internal pressure/tightness…….≥ 1 000 h Shear strength……..…..Pass Resistance to high temperatures……Pass.	*Number of European Standard* *Description of product and Nominal Pressure (PN) for which is intended* *Intended use* *Characteristics from Table ZA.1. Where subject to a threshold the manufacturer may either state the threshold or a higher value that his product attained during test if he so wishes.*

Figure ZA.1 – Example CE marking information

Materials used in products shall not release any dangerous substances in excess of the maximum permitted levels specified in a relevant European Standard for the material or permitted in the national regulations of the member state of destination.

In addition to any specific information relating to dangerous substances shown above, the product should also be accompanied, when and where required and in the appropriate form, by documentation listing any other legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

NOTE European legislation without national derogations need not be mentioned.

Bibliography

[1] EN 542: 2003, Adhesives - Determination of density

[2] EN 827:2005, Adhesives - Determination of conventional solids content and constant mass solids content.

[3] EN 12092: 2001, Adhesives - Determination of viscosity

[4] prEN ISO 9229, Thermal insulation - Definitions of terms (ISO/DIS 9229:2004)

[5] CEN ISO/TS 15874-7, Plastics piping systems for hot and cold water installations - Polypropylene (PP) - Part 7: Guidance for the assessment of conformity (ISO/TS 15874-7:2003)

[6] EN ISO 15908, *Adhesives for thermoplastic piping systems - Test method for the determination of thermal stability of adhesives (ISO 15908:2002)*

[7] EN 13566-1:2002*, Plastics piping systems for renovation of underground non-pressure drainage and sewerage networks - Part 1: General*

[8] EN 45020:2006*, Standardization and related activities - General vocabulary (ISO/IEC Guide 2:2004)*