

English Version

**Structural adhesives - Characterisation of anaerobic adhesives  
for co-axial metallic assembly in building and civil engineering  
structures**

Adhésifs structuraux - Caractérisation des adhésifs  
anaérobies pour assemblages métalliques coaxiaux dans  
les bâtiments et ouvrages de génie

Strukturklebstoffe - Charakterisierung anaerober Klebstoffe  
für koaxiale Metallverbindungen im Bauwesen

This European Standard was approved by CEN on 16 September 2007.

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## Foreword

This document (EN 15275:2007) 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of an identical text or by endorsement, at the latest by April 2008, and conflicting national standards shall be withdrawn at the latest by July 2009.

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 Construction Products Directive (89/106/EEC).

For relationship with EU Directive, see informative Annex ZA, which is an integral part of this document.

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.

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.

## Introduction

Anaerobic adhesives are single component adhesives that cure in absence of oxygen, curing being inhibited by the presence of oxygen and catalysed by metal ions. Polymerisation takes normally place at room temperature. Due to their curing properties these adhesives are well suited for easy assembling threaded and otherwise, pipes and tubes in building and civil engineering structures. By the curing reaction a polymeric material is formed, which fills narrow gaps or micro-imperfections of threads thus sealing and bonding the joint. In addition, anaerobic adhesives may be used to joint load-bearing parts of the structures when used in tubular lap joints or pin-into-bore type joints.

The primary aim of the test methods presented herein is for ranking and quality control of anaerobic adhesives and reliance should not be placed on any test results for design purposes. Design data should preferably be obtained from tests using the construction materials and configurations used in the actual design. The requirements to the assemblies are strongly depending on the intended use. Apart from the sealing ability, strength requirements may conflict with the intention to regular or occasional dismantling the joint for maintenance purposes. The values defined in this standard are considered to indicate a general or typical suitability for use of an anaerobic adhesive in a particular application in building and civil engineering structures.

## 1 Scope

This European Standard specifies requirements and test methods for the characterisation of anaerobic adhesives intended for the general assembly of co-axial metallic elements in building and civil engineering structures including fasteners- threaded and otherwise, pipes and tubes. It is applicable to single adhesives and systems (kits) comprising adhesives, activators and/or primers for both internal and external construction elements. This European Standard only applies to metallic substrates.

## 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 751-1, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water - Part 1: Anaerobic jointing compounds*

EN 923:2005, *Adhesives - Terms and definitions*

EN 1504-8, *Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 8: Quality control and evaluation of conformity*

EN 13999-1, *Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 1: General procedure*

EN 13999-2, *Adhesives - Short term method for measuring the emission properties of low-solvent or solvent-free adhesives after application - Part 2: Determination of volatile organic compounds*

EN 15337, *Adhesives - Determination of shear strength of anaerobic adhesives using pin-and-collar specimens (ISO 10123:1990 modified)*

EN ISO 75-3, *Plastics - Determination of temperature of deflection under load - Part 3: High-strength thermosetting laminates (ISO 75-3:2004)*

EN ISO 10964, *Adhesives - Determination of torque strength of anaerobic adhesives on threaded fasteners (ISO 10964:1993)*

## 3 Terms and definitions

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

### 3.1

#### **anaerobic adhesive**

adhesive that cures in absence of oxygen, curing being inhibited by the presence of oxygen and catalysed by metal ions

NOTE Deviating from this definition, anaerobic adhesives may be defined also as anaerobic polymerisable compounds, or anaerobic jointing compounds including liquid, gel like or pasty sealants.

#### 4 Performance characteristics for intended uses

The manufacturer shall undertake initial performance tests on the product in accordance with Table 1 and corresponding to the type of the defined application (e.g. retaining co-axial assemblies (see 5.1), threaded fasteners (see 5.2) and threaded joints in contact with 1st, 2nd and 3rd family gases and hot water (see 5.3)).

Table 1 — Performance characteristics for relevant applications

No	Property	Clause in this European Standard	Units	Reference Test Method	Additional information and test methods
1	Static shear strength	5.1.1	N/mm <sup>2</sup>	EN 15337	Only for products intended for use for retaining metallic co-axial cylindrical joints such as load bearing tubular or pin-and-collar-type cylindrical assemblies.  The test method can be also used to determine the shear strength of threaded fasteners. However, in this case it is recommended to assess the bond ability of the threaded assembly by means of the torque strength according to EN ISO 10964
2	Breakloose torque	5.2.1	Nm	EN ISO 10964	Only for products intended for use for securing or locking metallic threaded assemblies.
3	Prevailing torque	5.2.1	Nm	EN ISO 10964	The fastener specimen should be preloaded at 5 Nm, otherwise the input torque has to be explicitly mentioned in brackets (Input Torque in Nm). If unseated assemblies have been used, use the expression Unseated Assemblies in brackets.
5	Durability <sup>a</sup>	5.1.2	N/mm <sup>2</sup> or as ratio to shear strength at room temperature, No. 1	EN 15337	Shear Strength after 1000 h exposure to 100 °C  Only for products intended for use for retaining metallic co-axial cylindrical joints such as load bearing tubular or pin-and-collar-type cylindrical assemblies.  Expresses durability as shear strength or retention of the shear strength measured in accordance with EN 15337 after 1 000 h exposure to 100 °C (and if required to 150 °C).
6	Durability <sup>a</sup>	5.2.2	Nm or as ratio to breakaway torque at room temperature, No. 2	EN ISO 10964	Breakaway Torque after 1000 h exposure to 100 °C <sup>a</sup> Only for products intended for use for securing or locking metallic threaded assemblies.  Expresses durability as torque strength or retention of the torque strength measured in accordance with EN ISO 10964 after 1 000 h exposure to 100 °C (and if required to 150 °C, after 168 h in boiling water, or after 2 h exposure to -20 °C).
7	Heat resistance	5.1.3	°C	EN ISO 75-3	Shear Strength at 100 °C.
8	Heat resistance	5.2.3	°C	EN ISO 75-3	Breakloose Torque at 100 °C
4	Sealing ability	5.3	-	EN 751-1	Only for products intended for use to seal threaded metallic joints in contact with 1st, 2nd and 3rd family gases and hot water of heating systems.  The sealing ability includes the resistance to gas condensates, resistance to hot water, resistance to temperature cycling, and resistance to vibration as defined in EN 751-1  Use the expression Meets the Requirements Accordingly to EN 751-1.
9	Release of dangerous substances	5.4	µg/m <sup>3</sup>	EN 13999-1 and EN 13999-2	

No	Property	Clause in this European Standard	Units	Reference Test Method	Additional information and test methods
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<sup>a</sup> The determination of the strength and torque strength under the additional environmental conditions is only partly needed for specific applications by demand of the user or operator. To assess the heat resistance of an anaerobic adhesive measurement of the static shear strength in accordance with EN ISO 10964 or torque strength in accordance with EN 15337 may be conducted at other specified environmental conditions.

Indicative performance requirements are given in Annex A depending on the intended use. These values are drawn from laboratory and practical experience and can be considered to indicate satisfactory performance under normal practical use and conditions.

The torque strength of anaerobic adhesives on threaded fasteners is expressed as breakloose torque measured on assemblies preloaded with an input torque of 5 Nm. Also, identical input torque is assumed to be applied to the specimens when measuring the prevailing torque.

Attention shall be drawn to the fact, that shear strength properties measured in accordance with EN 15337 and EN ISO 10964 are valid for low-carbon respectively zinc-phosphated steel substrate materials. In general, curing of anaerobic adhesives may be significantly affected by the nature of the used adherends, thus testing using the specific materials of the intended application is recommended. It is also recommended to evaluate heat resistance or durability of the intended joint under conditions reflecting the environmental loading expected to encounter in practice.

## 5 Test methods

The test methods could be divided according to the type of the application, and the properties relevant to meet the requirements by the joint as follows:

### 5.1 Retaining co-axial assemblies

#### 5.1.1 Static shear strength

The static shear strength expresses the bond strength of an adhesive joint formed between a metal pin and a metal collar measured as compressive force required to push out the pin from the collar at constant crosshead speed according to EN 15337. The test method is primarily to be used for the determination of the shear strength capability of retaining metallic co-axial joints such as tubular lap joints or pin-and-collar type joints.

NOTE The test method can be also used to determine the shear strength of threaded fasteners. However, in this case it is recommended to assess the bond ability of the threaded assembly by means of the torque strength according to EN ISO 10964.

#### 5.1.2 Durability

Durability is expressed as retention of the static shear strength measured in accordance with EN 15337 after 1 000 h exposure to 100 °C and if required to 150 °C.

NOTE If required durability can be assessed at other specified environmental conditions in accordance with EN 15337.

#### 5.1.3 Heat resistance

To assess the heat resistance of an anaerobic adhesive measurement of the static shear strength in accordance with EN 15337 shall be conducted at 100 °C or at a particular, elevated temperature.

## 5.2 Threaded fasteners

### 5.2.1 Torque strength; breakloose torque; breakaway torque

The torque strength expresses the bond strength on threaded fasteners according to EN ISO 10964. It shall be expressed as breakloose torque evaluated on seated assemblies preloaded with specific input torque. This property can be used to make comparative assessments of the securing or locking effects of anaerobic adhesives used in threaded assemblies. In order to obtain well-defined test results, which primarily reflect the strength capacity of the used anaerobic adhesive, it is recommended to apply low input torque of 5 Nm to load the assembly. Higher input torque values may lead to higher torque strength results however with a relatively lower contribution from the adhesive and thus, they may be insufficient in order to clearly differentiate the securing performance of the used adhesive as its intrinsic property.

The prevailing torque specified in EN ISO 10964 to be measured on unseated or preloaded assemblies is used in addition to indicate the ability of the threaded assemblies to be disassembled for maintenance or inspection purposes.

### 5.2.2 Durability

Durability is expressed as retention of the torque strength measured in accordance with EN ISO 10964 after 1 000 h exposure to 100 °C and if required to 150 °C, after 168 h in boiling water, or after 2 h exposure to -20 °C. For anaerobic adhesives used to seal threaded metallic joints in contact with 1st, 2nd and 3rd family gases and hot water durability and heat resistance are measured in conjunction to the sealing ability in accordance with EN 751-1 thus no separate assessment of the torque strength retention after climate exposure is required.

### 5.2.3 Heat resistance

To assess the heat resistance of an anaerobic adhesive measurement of the torque strength in accordance with EN ISO 10964 shall be conducted at 100 °C or at a particular, elevated temperature. For anaerobic adhesives used to seal threaded metallic joints in contact with 1st, 2nd and 3rd family gases and hot water durability and heat resistance are measured in conjunction to the sealing ability in accordance with EN 751-1 thus no separate assessment of the torque strength retention after climate exposure is required.

## 5.3 Threaded joints in contact with 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> family gases and hot water

### 5.3.1 General

Details about 1st, 2nd and 3rd family gases can be found in EN 751-1 and EN 437.

### 5.3.2 Sealing ability

The sealing ability of anaerobic adhesives in threaded metallic joints in contact with 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> family gases and hot water of heating systems shall be measured according to EN 751-1. The sealing ability includes the resistance to gas condensates, the resistance to hot water, the resistance to temperature cycling, and the resistance to vibration.

## 5.4 Release of dangerous substance

For each type of application defined in 5.1, 5.2 and 5.3 the manufacturer shall measure the release of dangerous substances according to EN 13999-1 and EN 13999-2.

## 6 Evaluation of conformity

### 6.1 General

General requirements for procedures for evaluation of conformity are set out in EN 1504-8.

The conformity of General purpose adhesives with the requirements of this standard and with the stated values (including classes) shall be demonstrated by:

- initial type testing,
- factory production control by the manufacturer, including product assessment.

### 6.2 Initial type-testing

Initial type-testing shall be performed to show conformity with this standard. Initial type testing shall be performed when a new formulation or type of products produced. It shall be repeated:

- when there is a change in the formulation which may have a significant effect on the performance of the product
- when there is a change in the raw materials which may have a significant effect on the performance of the product.

The initial type testing shall comprise all performance characteristics, essential for the intended uses of the product. Characteristics and test methods are listed in Table 1.

### 6.3 Factory production control

The manufacturer shall operate a factory production control (FPC) system to ensure that production continues to meet the identification and performance requirements set out in 5.1.1 and 5.2.1.

For FPC, the manufacturer can select representative identification or performance tests or may select other test methods. Such other FPC test methods shall be correlated to the initial identification and performance test methods to ensure conformity of the product to the requirements of this standard. Such correlation shall be clearly documented in the FPC system. The manufacturer shall undertake these tests at least every year for the basic performance characteristics set out in 5.1.1 and 5.2.1.

The sealing ability in accordance with EN 751-1 is subjected to special regulations to maintain validity. The manufacturer shall document any related inspection or examination or results of tests carried out, and shall in general disclose the maintenance, extension or revalidation of them. Additionally, the manufacturer shall undertake performance tests to ensure production quality for adhesives intended to be used in threaded metallic joints in contact with 1st, 2nd and 3rd family gases and hot water of heating systems by means of static shear strength (see 5.1.1) or torque strength (see 5.2.1), or any other suitable method clearly documented in the FPC system at least every year.

## Annex A (informative)

### Indicative values for performance characteristics

**Table A.1 — Anaerobic adhesives for co-axial metallic elements in building and civil engineering structures including fasteners- threaded and otherwise, pipes and tubes - Performance requirements and corresponding standards**

Type of application	Property	Supporting standard	Performance requirement	Classification	Relevance
Retaining metallic co-axial cylindrical joints	Shear strength, in N/mm <sup>2</sup>	EN 15337	≥20	High strength shear	Load bearing tubular or pin-and-collar-type cylindrical assemblies
			≥10, <20	Medium strength shear	Easy-to-disassemble tubular or pin-and-collar-type cylindrical assemblies
Securing or locking metallic threaded assemblies	Breakloose torque, in Nm, for corresponding fastener specimen preloaded at 5 Nm	EN 10964 ISO	≥30	High strength	High clamp load retention performance against vibration
			≥15, <30	Medium strength	Medium to high static locking performance
			<15	Low strength	Low locking performance
	Prevailing torque, in Nm, for corresponding fastener specimen preloaded at 5 Nm		≥40	Difficult-to-dismantle	Permanent assembly, very rarely to dismantle
			≥20, <40	Possible-to-dismantle with standard equipment	Standard assembly, dismantling enabled but not regularly
			<20	Easy-to-dismantle	Temporary assembly, frequently to dismantle

## Annex ZA (informative)

### Relationship between this European Standard and the Essential Requirements of EU Construction Products Directive

#### ZA.1 Scope and relevant characteristics

This European Standard has been prepared under Mandate M127 Construction Adhesives 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 Anaerobic Adhesives covered by this annex for the 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 uses, can be applicable to the general purposes adhesives falling within the scope of this European 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 establishes the conditions for the CE marking of the anaerobic adhesives intended for the uses indicated in Table ZA.1 and shows the relevant clauses applicable.

This annex has the same scope as Clause 1 of this standard and is defined by Table ZA.1.

Table ZA.1 — Relevant clauses for anaerobic adhesives

<b>Product:</b> Anaerobic adhesives as covered under the scope of this standard			
<b>Intended use:</b> to bond co-axial metallic assemblies			
Essential Characteristics	Requirement clauses in this and other European Standard(s)	Levels and/or classes	Notes
Bond strength for threaded joints (as sealing ability)	5.3.2		
Bond strength for threaded fasteners (as Breakloose torque)	5.2.1	-	Expressed in Nm
Bond strength for retaining co-axial assemblies (as Static shear strength)	5.1.1	-	Expressed in N/mm <sup>2</sup>
Bond strength (as Prevailing torque )	5.2.1	-	Expressed in Nm
Durability for retaining co-axial assemblies	5.1.2	-	Expressed in N/mm <sup>2</sup>
Durability for threaded fasteners	5.2.2	-	Expressed in Nm
Heat resistance for co-axial assemblies	5.1.3	-	Expressed in N/mm <sup>2</sup>
Heat resistance for threaded fasteners	5.2.3	-	Expressed in Nm
Dangerous substances	5.4		
Sealing ability (including vibration resistance)	5.3		Use the expression Meets the Requirements Accordingly to EN 751-1.

The requirement on a certain characteristic is not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs 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 ZA.3) may be used. The NPD option may not be used, however, where the characteristic is subject to a threshold level.

## ZA.2 Procedure for attestation of conformity of anaerobic adhesives

### ZA.2.1 System of attestation of conformity

The system of attestation of conformity of General purpose adhesives indicated in Table ZA.1, in accordance with the Decision of the Commission 99/470/EC of 1999-06-29 amended by 01/596/EC of 2001-01-8 and as given in Annex III of the mandate for "Construction Adhesives", is shown in Table ZA.2 for the indicated intended use and relevant level(s) or class(es).

**Table ZA.2 — System of attestation of conformity**

Product	Intended use(s)	Level(s) class(es)	or	Attestation of conformity system
Anaerobic adhesives	for bonding co-axial metallic assemblies	none		2+

System 2+: See Directive 89/106/EEC (CPD) Annex III.2.(ii), First possibility, including certification of the factory production control by an approved body on the basis of initial inspection of factory and of factory production control as well as of continuous surveillance, assessment and approval of factory production control.

The attestation of conformity of the Anaerobic adhesives in Table ZA.1 shall be according to the evaluation of conformity procedures indicated in Table ZA.3 resulting from application of the clauses of this or other European Standard indicated therein.

**Table ZA.3 — Assignment of evaluation of conformity tasks for anaerobic adhesives under system 2+**

Tasks	Content of the task		Evaluation of conformity clauses to apply	
Tasks under the responsibility of the manufacturer	Factory production control (FPC)	Parameters related to all characteristics of Table ZA.1 relevant for the intended use	6.1; 6.3	
	Initial type testing by the manufacturer	<i>"Those characteristics of Table ZA.1 relevant for the intended use"</i>	6.2	
	Testing of samples taken at the factory	All characteristics of Table ZA.1 relevant for the intended use	6.1; 6.3	
	Certification of FPC by the FPC certification body on the basis of	Initial inspection of factory and of FPC	Parameters related to all characteristics of Table ZA.1, relevant for the intended use	6.1; 6.3
		Continuous surveillance, assessment and approval of FPC	Parameters related to all characteristics of Table ZA.1, relevant for the intended use	6.1; 6.3

**ZA.2.2 EC Certificate and Declaration of conformity**

(In case of products under systems 2+ or 2): When compliance with the conditions of this annex is achieved, and once the notified body has drawn up the certificate mentioned below, the manufacturer or his agent established in the EEA shall draw up 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 the place of production,

NOTE 1 The manufacturer may also be the person responsible for placing the product onto the EEA market, if he takes responsibility for CE marking.

- description of the product (type, identification, use, ...), and a copy of the information accompanying the CE marking,

NOTE 2 Where some of the information required for the Declaration is already given in the CE marking information, it does not need to be repeated.

- provisions to which the product conforms (i.e. Annex ZA of this EN), and a reference to the ITT report(s) and factory production control records (if appropriate),
- particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions),
- number of the accompanying factory production control certificate, and FPC records, where applicable,
- name and address of the notified laboratory(ies) [if some characteristics are tested by such a lab],
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or his authorised representative.

The declaration shall be accompanied by a factory production control certificate, drawn up by the notified body, which shall contain, in addition to the information above, the following:

- name and address of the notified body,
- the number of the factory production control certificate,
- conditions of validity of the certificate, where applicable,
- name of, and position held by, the person empowered to sign the certificate.

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

### ZA.3 CE marking and labelling

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE marking symbol to affix shall be in accordance with Directive 93/68/EC and shall be shown on the [anaerobic products] (or when not possible it may be on the accompanying label, the packaging or on the accompanying commercial documents e.g. a delivery note). The following information shall accompany the CE marking symbol:

- identification number of the certification body,
- name or identifying mark and registered address of the manufacturer (see NOTE 1 in ZA.2.2),
- last two digits of the year in which the marking is affixed,
- number of the EC Certificate of conformity or factory production control certificate (if relevant),
- reference to this European Standard,
- description of the product: generic name, material, and intended use,
- information on those relevant essential characteristics listed in Table ZA.1 which are to be presented as :
- declared values and, where relevant, level or class (including “pass” for pass/fail requirements, where necessary) to declare for each essential characteristic as indicated in “Notes” in Table ZA.1,
- “No performance determined” for characteristics where this is relevant,

- as an alternative, a standard designation which shows some or all of the relevant characteristics (where the designation covers only some characteristics, it will need to be supplemented with declared values for other characteristics as above).

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 the product, label, packaging and/or commercial documents.

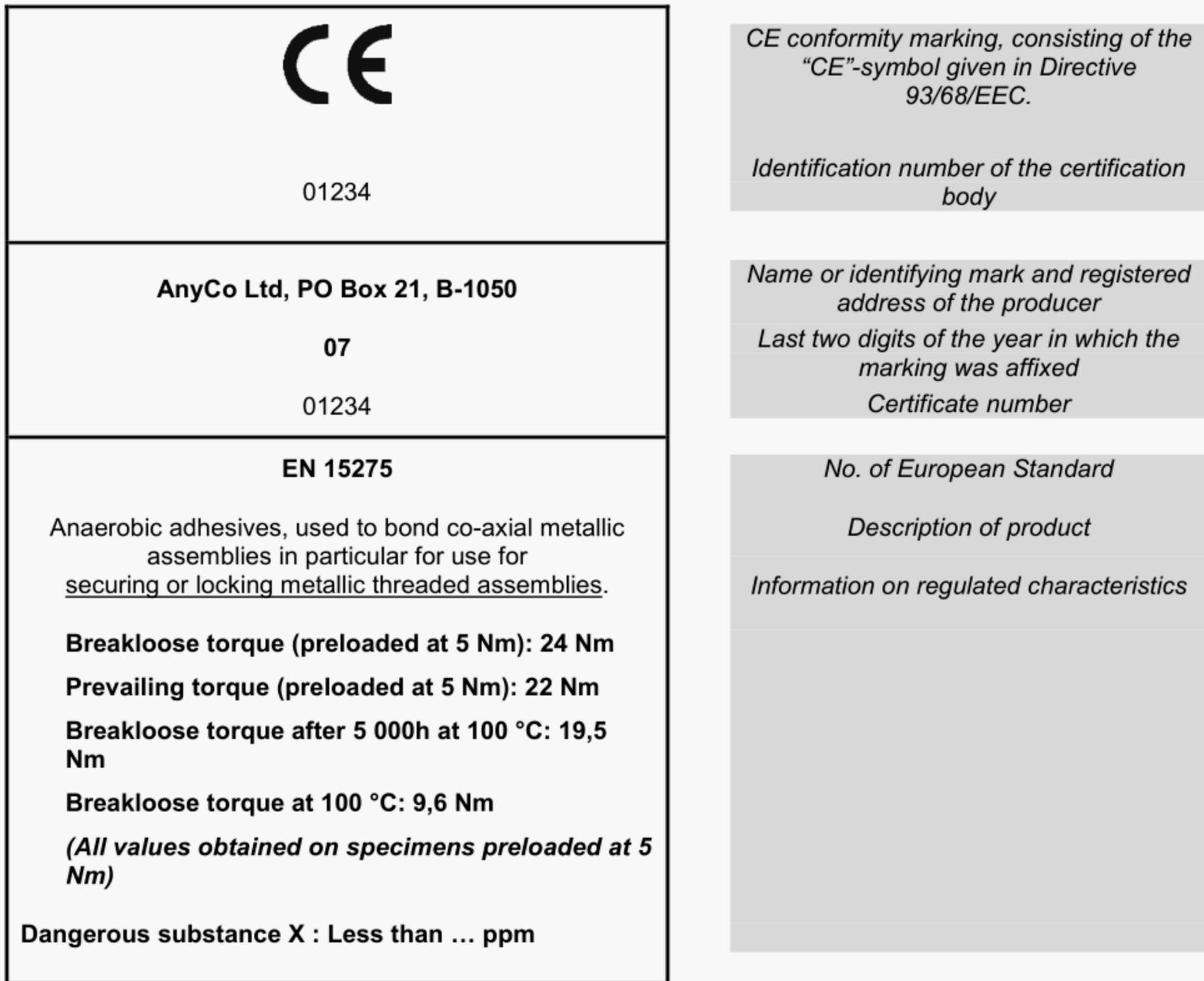


Figure ZA.1 — Example of CE marking information

 01234	<i>CE conformity marking, consisting of the "CE"-symbol given in Directive 93/68/EEC.</i>
AnyCo Ltd, PO Box 21, B-1050 07 01234-CPD-00234	<i>Identification number of the certification body</i>  <i>Name or identifying mark and registered address of the producer</i>  <i>Last two digits of the year in which the marking was affixed</i>  <i>Certificate number</i>
<b>EN 15275</b>  Anaerobic adhesives, used to bond co-axial metallic assemblies in particular for use for <u>securing or locking metallic threaded assemblies</u>	<i>No. of European Standard</i>  <i>Description of product</i>  <i>Information on regulated characteristics</i>

**Figure ZA.2- Simplified CE marking information to be attached to the product or packaging**

The values for the determined characteristics shall be included in the accompanying documents or data sheets

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 1 European legislation without national derogations need not be mentioned.

NOTE 2 Affixing the CE marking symbol means, if a product is subject to more than one directive that it complies with all applicable directives.

## Bibliography

- [1] EN 437, *Test gases - Test pressures - Appliance categories*

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