BRITISH STANDARD

BS EN
12637-3:2003

Products and systems for the protection and repair of concrete structures — Test methods — Compatibility of injection products —

Part 3: Effect of injection products on elastomers

The European Standard EN 12637-3:2003 has the status of a British Standard

ICS 91.080.40

BSI
British Standards

National foreword

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The UK participation in its preparation was entrusted by Technical Committee B/517, Concrete, to Subcommittee B/517/8, Protection and repair of concrete structures, which has the responsibility to:

— aid enquirers to understand the text;

— present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;

— monitor related international and European developments and promulgate them in the UK.

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

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English version

Products and systems for the protection and repair of concrete structures - Test methods - Compatibility of injection products - Part 3: Effect of injection products on elastomers

Produits et systèmes de protection et de réparation de structures en béton - Méthodes d'essai - Compatibilité des produits d'injection - Partie 3: Effet des produits d'injection sur les élastomères

Produkte und Systeme für den Schutz und die Instandsetzung von Betontragwerken - Prüfverfahren - Verträglichkeit von Rissfüllstoffen - Teil 3: Einwirkung von Rissfüllstoffen aus Kunststoff im Beton

This European Standard was approved by CEN on 1 September 2003.

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Contents

Foreword

This document (EN 12637-3:2003) has been prepared by Technical Committee CEN/TC 104, "Concrete and related products", the Secretariat of which is held by DIN.

This document has been prepared by Sub-Committee 8 “Products and systems for the protection and repair of concrete structures” (Secretariat AFNOR).

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of an identical text or by endorsement, at the latest by June 2004, and conflicting national standards shall be withdrawn at the latest by June 2004.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This part of this European Standard describes a test method to determine the ability of polymeric insert in concrete to withstand the effect of hardening and hardened injection products.

NOTE This compatibility test is only applicable if the properties of a polymeric insert in concrete are deemed to be influenced by the hardening and hardened injection product which is used.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 1504-1:1998, *Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 1 : Definitions*.

prEN 1504-5:2001, *Products and systems for the protection and repair of concrete structures - Definitions, requirements, quality control and evaluation of conformity - Part 5 : Concrete injection*[1)].

EN ISO 527, *Plastics - Determination of tensile properties*.

ISO 5893, *Rubber and plastics test equipment - Tensile, flexural and compression types (constant rate of transverse) - Specification*.

3 Terms and definitions

For the purpose of this Part of this European Standard, the definitions of EN 1504-1:1998 and prEN 1504-5:2001 shall apply.

Polymeric insert : polymeric piece (waterproofing membrane, joint sealer, cable, pipe …) present in the crack or void filled by the injection product.

4 Test principle

This method provides a procedure for exposing polymeric test specimens to the influence of hardening and hardened injection product under definite conditions of temperature and time and to assess the effect of the injection product on the polymeric insert.

The test is usually performed on the insert with which the injection product will come in contact in service.

5 Apparatus

5.1 Framework, as illustrated in Figure 1.

The essential features of the framework consists of a base plate, and an open-ended chamber 150 mm diameter which is held tightly against the test specimen by wing nuts mounted on bolts.

During the test, the opening in the top of the chamber is tightly closed by a suitable plug.

1) At draft stage.

5.2 Grinding techniques, such as abrasive wheels or abrasive flexible bands, to remove excess of thickness, unevenness of surface of polymeric insert, in order to obtain flat sheets of polymeric insert.

5.3 Die, for cutting dumbbell specimens, according to relevant part of EN ISO 527.

5.4 Tension testing machine, according to ISO 5893.

5.5 Weighing device, capable of weighing a specimen to the nearest 0,001 g.

5.6 Injection product mixer.

6 Sampling and preparation

6.1 Test specimen

The standard specimens shall be circular, (155 ± 2) mm in diameter and (2 ± 0,2) mm in thickness. Specimens from commercial products shall have the thickness of the material as received when they are less than 2 mm; otherwise, they should be ground to a thickness of (2,0 ± 0,1) mm.

If it is not possible to get specimens with the standardised dimensions (e.g. cables, pipes, …) or if the grounding techniques are not applicable, a suitable method of preparation and exposure agreed by all parties shall be used.

Prior to testing, the surface of the specimens shall by abraded, and any surface contaminants removed to achieve comparative testing.

At least nine test specimens shall be prepared (three for measuring the original properties, six for the properties on aged sample).

The specimens shall be conditioned for 24 h at (21 ± 2) °C and (60 ± 10) % relative humidity.

The initial mass of each specimen is determined to the nearest 1 mg.

6.2 Injection product

The injection product shall be prepared in accordance with the requirements of the manufacturer.

6.3 Original properties of polymeric insert

The original tensile strength and elongation shall be determined in accordance with relevant part of test method EN ISO 527.

If EN ISO 527 is not applicable, a suitable method agreed by all parties shall be used.

The test shall be carried out on each of the three specimens.

6.4 Preparation of assembly

If relevant, the inner faces of the chamber of the test apparatus shall be covered with a demoulding agent, in order to avoid adhesion of the hardened injection product to the constituent material of the chamber.

The demoulding agent shall have no detrimental effect on the hardening of the injection product, and on the polymeric insert.

The test specimen is laid evenly on the base plate and the assembly is fixed in place with wing nuts and bolts.

7 Procedure

7.1 The standard conditions of test shall be (21 ± 2) °C and (60 ± 10) % relative humidity.

7.2 Immediately after the mixing, a layer (5 ± 1) mm thick of the injection product is poured to the test specimen, and allowed to harden.

Three assemblies are maintained during 28 days and three assemblies at 70 days; the chamber is kept tightly closed, to avoid losing volatile constituents of the test materials (e.g. in case of swelling fitted injection products).

7.3 After the contact periods (28 days or 70 days), the assembly is dismantled and the specimen is removed. Any excess injection product is removed from the surface of the specimen.

7.4 The specimens are inspected visually and compared to the original specimens.

7.5 The mass of the specimen m_2 is determined to the nearest 1 mg.

7.6 Tensile strength and elongation are determined in accordance with the relevant part of test method EN ISO 527. If EN ISO 527 is not applicable, a suitable method agreed by all parties shall be used.

7.7 The test shall be carried out on each of the three specimens.

8 Results

8.1 Visual inspection

Softening, hardening, partial dissolution, discoloration, surface degradation and other changes are reported.

8.2 Change in mass

The change in mass shall be expressed in the percentage of the initial mass.

A positive result means an increase of mass, while a negative result means a loss of mass of the specimen after conditioning.

8.3 Changes in tensile strength and elongation

The changes in tensile strength and elongation shall be expressed in the percentage of the initial tensile strength and elongation.

9 Test report

The test report shall contain the following information :

a) reference to this Part of this European Standard ;

b) name and address of the test laboratory ;

c) identification number and date of the test report ;

d) name and address of the manufacturer or supplier of the products (elastomer and injection product) ;

e) name and identification marks or batch number of the products ;

f) date of supply of the products ;

g) procedure of preparation of the test specimens and any deviation from the prescribed method of preparation, procedure of preparation of injection product, date of preparation ;

h) conditions of storage of prepared specimens prior to test ;

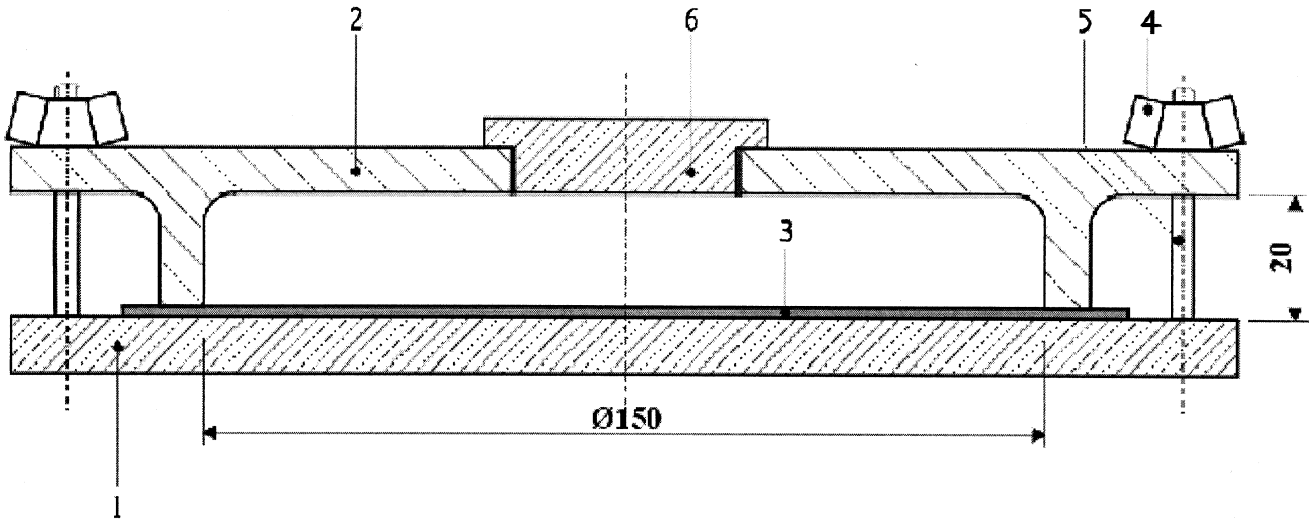
i) date of tests and details of the test equipment used, including the make, type and capacity and the calibrations details or the identification number of the apparatus; test conditions and test specimens, and any deviation from the prescribed test methods, start of immersion ;

j) the test results : visual changes, individual and average values of changes in mass after 28 and 70 days, individual and average values of tensile properties initial after 28 and 70 days, and changes in tensile strength and elongation after 28 and 70 days ;

k) precision data ;

l) date of test report and signature.

Dimensions in mm



Key

1	Base plate	4	Wing nut
2	Chamber	5	Bolt
3	Test specimen	6	Plug

Figure 1 — Suitable exposure apparatus for polymer inserts to injection products

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