British Standard

BRITISH STANDARD

BS 6076 : 1996

Specification for

Polymeric film for use as a protective sleeving for buried iron pipes and fittings (for site and factory application)

ICS 83.140

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Sector Board for Engineering to Technical Committee PSE/10, Iron pipes and fittings, upon which the following bodies were represented:

Adhesive Tape Manufacturers Association
British Foundry Association
Ductile Iron and Pipe Committee
Institute of British Foundrymen
Institution of Mechanical Engineers
Institution of Water and Environmental Management
Pipeline Protection Association
Society of British Water Industries
Water Companies Association
Water Research Centre
Water Services Association of England and Wales

This British Standard, having been prepared under the direction of the Engineering Sector Board, was published under the authority of the Standards Board and comes into effect on
15 November 1996

First published June 1981
Second edition November 1996

The following BSI references relate to the work on this standard:
Committee reference PSE/10
Draft for comment 91/82094 DC

ISBN 0 580 25573 5

Amendments issued since publication

Amd. No.	Date	Text affected

Contents

Foreword

This British Standard has been prepared by Technical Committee PSE/10 and supersedes BS 6076 : 1981 which is withdrawn.

Section **2** of this standard is based on the first publication of BS 6076 : 1981 and is exclusively for tubular polymeric sleeving for site application.

Sections **3** and **4** are exclusively for factory application of sheet form polymeric film to ductile iron pipe and are based on current practices and on tests carried out by the Ductile Iron Pipe Association, the Water Research Centre and sleeving film manufacturers.

Product Certification

Users of this British Standard are advised to consider the desirability of third party certification of product conformity with this British Standard based on testing and continuing product surveillance, which may be coupled with assessment of a supplier's quality systems against the appropriate Part of BS EN ISO 9000.

Enquiries as to the availability of third party certification schemes will be forwarded by BSI to the Association of Certification Bodies. If a third-party certification scheme does not already exist, users should consider approaching an appropriate body from the list of association members.

This standard is not intended to limit the development of alternative materials which perform at least as well in terms of performance required by this standard.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Introduction

This British Standard has been based on the current practices used in protecting underground iron pipes and fittings from corrosion in aggressive soils.

Polymeric film in the tubular form was first used as a protection medium in America in 1951. It has proved to be an effective way of combating corrosion and is now used for this purpose throughout the world. The tubular film is sleeved over the pipes and fittings immediately prior to laying and the overlap at the joints made to provide a close fit along the pipeline.

Polymeric film in the sheet form is applied to the pipe in the factory by the cigarette wrapping technique. Joints and fittings in a factory sleeved pipeline are protected in situ by suitable means.

blank

Section 1. General

1.1 Scope

This British Standard specifies the composition, structure, mechanical properties, sizes, testing, marking and appearance requirements of both tubular polymeric film for site application and sheet polymeric film for factory application to ductile iron pipes. This British Standard also specifies requirements for the factory application of sheet sleeving and the repair of sleeving before or during installation of the pipeline.

1.2 Normative references

This British Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this standard only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

1.3 Definitions

For the purposes of this British Standard, the following definitions apply.

1.3.1 ***layflat width***

Width of a flattened tube which is equal to half the circumference.

1.3.2 ***window***

Hole that may occur in individual layers of polyethylene film when producing multi-layered film.

1.3.3 ***machine direction***

Circumferential direction of the film as applied to the pipe.

1.3.4 ***transverse direction***

Longitudinal direction of the film as applied to the pipe.

1.3.5 ***circumferential edge***

Edge of the film that fits circumferentially around the pipe.

1.3.6 ***longitudinal edge***

Edge of the film that fits along the barrel of the pipe.

1.3.7 ***cigarette wrap***

Covering which is applied in sheet form to a tube, the leading edge being parallel to the longitudinal edge of the tube.

1.3.8 ***adhesive deposition pattern***

Appearance or form in which the adhesive is applied to the film.

NOTE. The pattern may be for example a continuous band, overlapping spirals or zig-zag.

1.3.9 ***scrim layer***

Layer of reinforcing material (e.g. woven polymeric) supplied in sheet form.

1.4 Appearance

The colour of the films shall be in accordance with BS 4800 : 1989, i.e. blue (18E51 to 18E53), black (00E53) or yellow (10E50 to 10E55), or red (04D43 to 04D45).

NOTE.1. Shade variations inherent in the manufacturing process are permissible.

NOTE.2. The following colour coding is recommended: blue for potable water pipelines, red or black for sewerage and non-potable water and yellow for gas.

Section 2. Tubular polymeric film for site application

2.1 Composition

The film shall be manufactured from polyethylene, or from a blend of polyethylene and/or a copolymer of ethylene and higher olefins.

NOTE. A well dispersed carbon black pigment, antioxidants and slip agents may be included.

2.2 Additives and residuals

Antioxidants shall not exceed 0.5 % (*m/m*). Colouring agents shall not exceed 3.0 % (*m/m*). The material shall not contain any plasticizers or fillers (other than the colouring agent).

The impurities in the material, excluding permitted amounts of colouring agent or antioxidant, shall not exceed 0.1 % (*m/m*). The ash from the film, after ignition at 800 °C shall not exceed 2.0 % (*m/m*).

2.3 Reworked material

The film shall not contain any regenerated products other than clean rework material, of the appropriate colour generated by the manufacturer's own production. The proportion of rework material shall not exceed 20 % (*m/m*) in any batch.

2.4 Film structure

2.4.1 *Structure of the film*

The film shall be one of the following two types:

a) a single layer extruded as a tube and supplied in layflat form; or

b) a cross laminate of two or more layers laid so that the extrusion directions of consecutive layers form an angle with each other.

NOTE 1. Film is normally supplied in sheet form for later conversion into tubular form.

The film shall not contain holes, splits, splices, perforations or other through thickness discontinuities.

NOTE 2. Special requirements apply to laminated films only (see **2.4.2** and **2.6.4**).

2.4.2 *Requirements for laminated film only*

The film layer shall be properly and completely bonded together with no local tendency to delamination (see **2.6.4**).

Windows in one of the single layers of the film shall be permitted. Their frequency shall not exceed 5 per 1000 m of running length and their dimensions shall not exceed 2500 mm^2, or over 100 mm in any direction.

Splices in one of the single layers shall be permitted. Their frequency shall not exceed 2 per 1000 m of running length. To avoid short roll lengths, through film splices shall be allowed at not more than 1 per 1000 m reel. Their presence shall be clearly identified.

2.5 Dimensions

2.5.1 For all types of film (see **2.4.1**) the mean film thickness shall be 225 μm ± 25 μm, when measured in accordance with BS 2782 : Part 6 : Method 631A : 1993.

For film whose thickness can be measured directly, when measured in accordance with BS 2782 : Part 6 : Method 630A : 1994, the minimum thickness at any point shall be not less than 185 μm.

2.5.2 The nominal layflat width of the tubular film shall conform to the dimensions given in table 1.

NOTE. Table 1 gives the minimum dimensions for push-in and mechanical joints.

2.5.3 The tolerance on width of the tube shall be ± 2.5 %.

Table 1. Layflat width of tubular polymeric film for various sizes of iron pipe

Pipe size (DN)	**Layflat width of tubular polymeric film** (mm)	
	For use with pipeline incorporating mechanical flexible joints	**For use with pipeline incorporating push-in flexible joints**
80	—	280
100	450	280
150	550	400
200	650	550
250	700	650
300	800	700
350	—	800
400	1100	1100
450	1100	1100
500	1350	1350
600	1350	1350
700	1750	1750
800	—	1750
900	—	2000
1000	—	2000
1100	—	2500
1200	—	2500
1400	—	3500
1600	—	3500

2.6 Properties

2.6.1 *Visual*

The film shall be free from tears, voids, pinholes and other discontinuities.

2.6.2 *Tensile strength*

When tested in accordance with BS 2782 : Part 3 : Method 326C : 1977, the ultimate tensile strength of the film in both the longitudinal and circumferential directions shall be not less than the value shown in table 2.

NOTE. This is equivalent to 11 MPa, assuming a film thickness of 200 μm.

2.6.3 *Elongation*

When tested in accordance with BS 2782 : Part 3 : Method 326C : 1977, the elongation at break of the film in both the longitudinal and circumferential directions shall be not less than the value shown in table 2.

2.6.4 *Lamination peel strength*

When tested in accordance with BS 5350 : Part C12 : 1994 the laminated film shall have a lamination peel strength of not less than the value shown in table 2.

Table 2. Required mechanical properties for the two types of site-applied sleeving

Mechanical property	Type of film		Clause
	Single layer film	Cross laminate film	
Tensile strength[1)] (N)	44	44	**2.6.2**
Elongation (%)	300	300	**2.6.3**
Lamination peel strength[1)] (N)	–	1	**2.6.4**

[1)] The values given in the table are for a 20 mm sample width.

2.7 Marking

The tubular film supplied shall bear a card or label containing the following information:-

a) the manufacturer's name and/or trade name;

b) the number of this British Standard, i.e. BS 6076 : 1996[1)];

c) the type of film, e.g. 'Section 2 type film';

d) the layflat width and length of the film.

2.8 Packaging, distribution and storage

2.8.1 The film shall be supplied in rolls on cores of internal diameters not less than 75 mm.

2.8.2 The rolls shall be suitably supported and protected from damage during storage and distribution.

NOTE. Exposure to direct sunlight of film that does not contain carbon black should be kept to the minimum practical level.

[1)] Marking BS 6076 : 1996 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the claimant's responsibility. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

Section 3. Sheet polymeric film for factory application

3.1 Composition

The material used for making the film shall be any or a mixture of the following: polyethylene, elastomers, and polyolefins and their copolymers.

3.2 Additives and residuals

Antioxidants shall not exceed 0.5 % (*m/m*). Colouring agents shall not exceed 3.0 % (*m/m*). The material shall not contain any plasticizers or fillers (other than the colouring agent).

The impurities in the material, excluding permitted amounts of colouring agent or antioxidant, shall not exceed 0.1 % (*m/m*). The ash from the film, after ignition at 800 °C shall not exceed 2.0 % (*m/m*).

3.3 Reworked material

The film shall not contain any regenerated products other than clean rework material, of the appropriate colour generated by the manufacturer's own production. The proportion of rework material shall not exceed 20 % (*m/m*) in any batch.

3.4 Film structure

3.4.1 *Structure of the film*

The film shall be one of the following three types:

a) a single layer in sheet form;

b) a cross laminate of two or more layers manufactured in sheet form and laid so that the extrusion directions of consecutive layers form an angle with each other;

NOTE. Special requirements apply to laminated films only (see **3.4.2** and **3.6.6**).

c) a reinforced multi-layer consisting of type (a) or type (b) films reinforced with a scrim layer (e.g. polymeric) to give increased tear resistance and rigidity.

The film applied to the pipe shall not contain holes, splits, splices, perforations or other through thickness discontinuities.

3.4.2 *Requirements for laminated film only*

The film layer shall be properly and completely bonded together with no local tendency to delamination (see **3.6.6**). Windows in one of the single layers of the film shall be permitted. Their frequency shall not exceed 5 per 1000 m of running length and their dimensions shall not exceed 2500 mm^2, or over 100 mm in any direction.

Splices in one of the single layers of the film shall be permitted. Their frequency shall not exceed 2 per 1000 m of running length. To avoid short roll lengths, through film splices shall be allowed at not more than 1 per 1000 m reel. Their presence shall be clearly identified.

3.5 Dimensions

3.5.1 The manufacturer shall declare the nominal film thickness, which shall be used as the basis for subsequent product testing.

For all types of film (see 3.4.1) the mean film thickness shall not differ from the nominal film thickness by more than 7.5 %, when measured in accordance with BS 2782 : Part 6 : Method 631A : 1993.

For film whose thickness can be measured directly, when measured in accordance with BS 2782 : Part 6 : Method 630A : 1994, the minimum thickness shall be not less than 185 μm and shall not differ from the nominal thickness by more than 15 %.

3.5.2 The nominal width of the sheet shall be not less than 1.0 m and not greater than 2.0 m. Sheet width shall not vary by more than 2 mm from the nominal width when measured at 23 °C.

3.6 Mechanical properties

3.6.1 *Tensile strength*

When tested in accordance with BS 2782 : Part 3 : Method 326C : 1977, the ultimate tensile strength of the film in the machine and transverse directions, and at 45° to these principal directions shall be not less than the value shown in table 3.

3.6.2 *Elongation*

When tested in accordance with BS 2782 : Part 3 : Method 326C : 1977, the elongation at break of the film in the directions specified in **3.6.1** shall be not less than the value shown in table 3.

NOTE. When the elongation is greater than the capacity of the testing machine, a shorter sample length (minimum 50 mm) may be used.

3.6.3 *Tear resistance*

When tested in accordance with BS 903 : Part A3 : 1995 (using crescent test pieces) at 500 mm per min, the film shall have a resistance to tearing in both machine and transverse directions of not less than the value shown in table 3.

3.6.4 *Impact resistance*

When tested in accordance with ASTM G14 [1] on a DN100 pipe, the film shall be capable of resisting perforation due to impact of not less than the value shown in table 3.

3.6.5 *Puncture resistance*

When tested in accordance with BS 4816 : 1972, the film shall be capable of resisting a puncture energy of not less than the value shown in table 3.

3.6.6 *Lamination peel strength*

When tested in accordance with BS 5350 : Part C12 : 1994, the laminated film shall have a lamination peel strength of not less than the value shown in table 3.

Table 3. Required mechanical properties for the three types of factory-applied sleeving

Mechanical property	Type of film			Clause
	Single layer film	Cross laminate film	Scrim reinforced film	
Tensile strength[1),2)] (N)	140	140	240	**3.6.1**
Elongation (%)	150	150	25	**3.6.2**
Tear resistance (kN/m)	140	140	240	**3.6.3**
Impact resistance (N·m)	1	1	1.2	**3.6.4**
Puncture resistance (N·m)	20	20	15	**3.6.5**
Lamination peel strength[1)] (N)	–	1	1	**3.6.6**
Tensile strength after accelerated ageing[1),2)] (N)	112	112	220	**3.6.7**
Elongation after accelerated ageing (%)	120	120	20	**3.6.7**
Tensile strength after natural weathering[1),2)] (N)	112	112	220	**3.6.8**
Elongation after natural weathering (%)	120	120	20	**3.6.8**

[1)] The values given in the table are for a 20 mm sample width.
[2)] For the 45° direction a sample width in the range 20 mm to 80 mm may be used, but the result obtained shall be corrected to a 20 mm sample width.

3.6.7 *Tensile strength and elongation after accelerated ageing*

When aged in accordance with BS 2782 : Part 5 : Method 540B : 1982, for 20 days at 55 °C using a xenon lamp and tested in accordance with BS 2782 : Part 3 : Method 326C : 1977, the minimum ultimate tensile strength in the machine and transverse directions shall be not less than the value shown in table 3.

When tested in accordance with BS 2782 : Part 3 : Method 326C : 1977, the elongation at break of the aged film in the machine and transverse directions shall be not less than the value shown in table 3.

NOTE. When the elongation is greater than the capacity of the testing machine, a shorter sample length (minimum 50 mm) may be used.

3.6.8 *Tensile strength and elongation after natural weathering*

After exposure in accordance with clause **6** of BS 3900 : Part F6 : 1976 for 12 months commencing March, April or May, the minimum ultimate tensile strength of the aged film in the machine and transverse directions shall be not less than the value shown in table 3 when tested according to BS 2782 : Part 3 : Method 326C : 1977.

When tested in accordance with BS 2782 : Part 3 : Method 326C : 1977, the elongation at break of the aged film in the machine and transverse directions shall be not less than the value shown in table 3.

NOTE. When the elongation is greater than the capacity of the testing machine, a shorter sample length (minimum 50 mm) may be used.

3.7 Reel parameters

3.7.1 *Marking*

Each reel shall have a card or label attached containing the following information:

a) the manufacturer's name and/or trade name;

b) the number of this British Standard, i.e. BS 6076 : 1996[2)];

c) the type of film, e.g. 'Section 3 type film';

d) batch number;

e) nominal thickness and/or weight per unit area of film;

f) length of the film.

3.7.2 *Length of film*

The length of film wound on to a reel shall be not less than the nominal length specified by the film manufacturer.

[2)] Marking BS 6076 : 1996 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the claimant's responsibility. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

Section 4. Factory application of film to pipe

4.1 Adhesive

Where film is applied to ductile iron pipes by means of a hot melt adhesive, the application shall be in accordance with **4.2** and the mechanical properties of the bond shall conform to **4.3**. Other means of bonding shall be such that the mechanical properties of the bond conform to **4.3**.

4.2 Application of hot melt adhesive to film

4.2.1 *Adhesive deposition rate*

The minimum mass per unit area of adhesive applied to the circumferential and longitudinal edges of the sheet required to meet the bond strength requirements of **4.3** shall be determined by the sleeving applicator. This shall be taken as the minimum acceptable adhesive mass per unit area for quality control purposes.

Determinations of the mass per unit area of adhesive deposition pattern applied to the sheet shall be carried out at a frequency sufficient to ensure compliance with this standard, the results of the tests being recorded.

4.2.2 *Adhesive deposition patterns on film sheet*

The edge of the adhesive deposition pattern at circumferential edges of the sheet shall be no more than 23 mm from the edge of the sheet. The edge of the adhesive deposition pattern at longitudinal edges of the sheet shall be no more than 10 mm from the edge of the sheet.

The circumferential and longitudinal adhesive deposition patterns shall overlap to ensure that the adhesive deposition pattern is continuous around the sheet.

The circumferential adhesive deposition pattern shall be continuous with a minimum width of 17 mm, and the longitudinal deposition pattern shall be continuous with a minimum width of 35 mm.

4.3 Adhesive joint type tests

4.3.1 *Shear strength*

4.3.1.1 When tested in accordance with **4.3.1.2**, the bond shall be capable of withstanding a shearing force of not less than 120 N.

4.3.1.2 Using the minimum mass per unit area of adhesive (see **4.2.1**), bond together two strips of film each 25 mm $\pm$ 0.5 mm wide over an adhesive deposition pattern width of 25 mm $\pm$ 0.5 mm and test at a separation rate of 100 mm/min at 23 °C. Tests shall be carried out otherwise in accordance with BS 5350 : Part C5 : 1990 and the result shall be the mean shear strength of 10 tests.

4.3.2 *Peel strength*

4.3.2.1 When tested in accordance with **4.3.2.2**, the bond shall be capable of withstanding a peeling force of not less than 30 N.

4.3.2.2 Using the minimum mass per unit area of adhesive (see **4.2.1**), bond two strips of film each 25 mm $\pm$ 0.5 mm wide together and test at a separation rate of 100 mm/min and at a temperature of 23 °C. Tests shall be carried out otherwise in accordance with BS 5350 : Part C12 : 1994 and the result shall be the mean peel strength of 10 tests.

4.3.3 *Ageing in water*

4.3.3.1 When tested after ageing in water in accordance with **4.3.3.2**, the shear strength shall be not less than 40 N and the peel strength shall be not less than 7 N.

4.3.3.2 Store samples in deionized water at 23 °C for 28 days. Test samples in accordance with **4.3.1.2** and **4.3.2.2**.

4.4 Application of film to the pipe surface

4.4.1 *Condition of pipe surface*

Before the application of glued sheet in accordance with this specification to ductile iron pipes, the pipes shall be thoroughly checked for areas of damage to the pipe or the external coating. The pipe surface shall be clean, dry and free from protuberances likely to cause puncturing of the film during application or subsequent handling of the wrapped pipe.

4.4.2 *Application*

The glued sheet shall be wrapped around the pipe by a cigarette wrap, and all glue joints shall be firmly sealed to the pipe and/or film. Adjacent sheets shall overlap by not less than 40 mm.

4.4.3 *Position of the sheet on the pipe*

4.4.3.1 *Spigot end*

The position of the film from the end of the pipe shall be as shown in figure 1.

4.4.3.2 *Socket end*

The position of the film from the socket face shall be as shown in figure 2.

4.4.4 *Condition*

The film applied to the pipe shall contain no through thickness discontinuities, perforations, tears or splices. Any pipe having a defective sleeving in the processing area shall be re-wrapped.

NOTE. The film applied should be substantially smooth with a minimum of wrinkles at the seams.

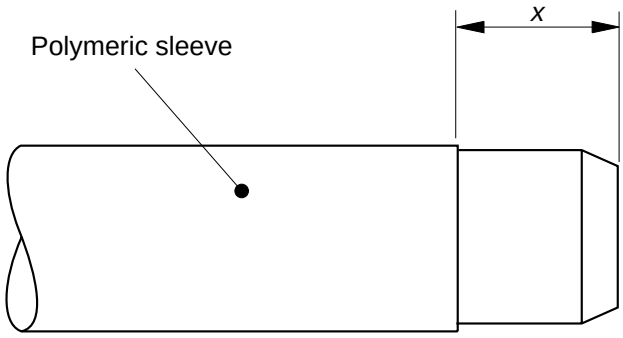
4.5 Marking

The film applied to each pipe shall be legibly and durably marked at intervals of not less than 1 m along the length of the pipe with the following:

a) the film applicator's name, initials or identification mark;

b) the number of this British Standard, i.e. BS 6076 : 1996[3)].

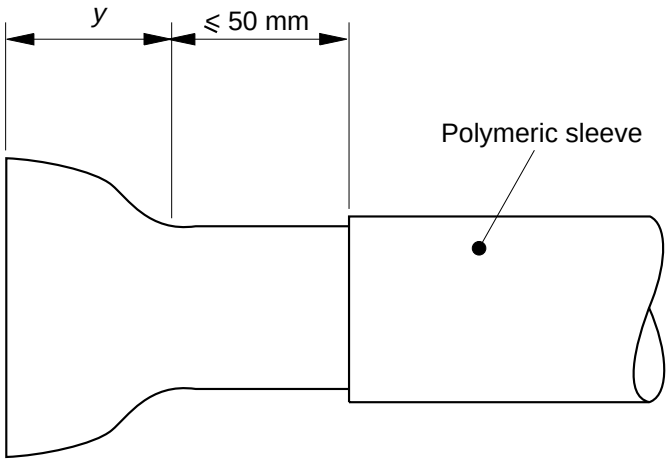
NOTE. The film applicator's quality system should enable film on pipes to be traceable to source.



x = Spigot insertion depth $^{+50}_{0}$ mm [1)]

[1)] The spigot insertion depth depends upon the design of joint and the pipe size. This information shall be given in the manufacturer's catalogues.

Figure 1. Position of film on spigot end of pipe



y = Length of socket external profile [1)]

[1)] The length of the socket external profile depends upon the design of joint and the pipe size. This information shall be given in the manufacturer's catalogues.

Figure 2. Position of film on socket end of pipe

[3)] Marking BS 6076 : 1996 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the claimant's responsibility. Such a declaration it not to be confused with third party certification of conformity, which may also be desirable.

Section 5. Certification

5.1 Manufacturer's certificate

The manufacturer of the film shall, on request, furnish the purchaser or purchaser's representative with copies of a signed certificate confirming conformity to this standard. The manufacturer shall carry out sufficient tests to ensure the quality of the product and shall keep adequate records available for inspection. If required by the purchaser, quality control test results shall be provided with the certificate.

Section 6. Repair of damaged sleeving before or during installation of the pipeline

6.1 General

Any damaged sleeving shall be repaired using repair material conforming to **6.2** before or during installation of the pipeline.

6.2 Repair material

6.2.1 *Composition*

The repair material shall consist of a waterproof film coated with a pressure sensitive adhesive.

6.2.2 *Thickness*

The nominal thickness of the repair material shall be not less than the nominal thickness of the film used to sleeve the pipe.

6.2.3 *Tensile strength*

When tested in accordance with BS 2782 : Part 3 : Method 326C : 1977, the repair material shall have a minimum tensile strength of 60 N per 20 mm of width.

6.2.4 *Elongation at break*

When tested in accordance with BS 2782 : Part 3 : Method 326C : 1977, the repair material shall have an elongation at break of not less than 20 %.

6.2.5 *Impact strength*

When tested in accordance with ASTM G14 [1], the repair material shall have a minimum impact strength of 1 N·m.

6.2.6 *Adhesion of repair material to polymeric sleeving*

When measured in accordance with BS 5350 : Part C12 : 1994, the adhesion of the repair material to the basic polymeric film shall be not less than 16 N per 20 mm strip width when tested at a separation rate of 100 mm per minute and at 23 °C.

6.2.7 *Application and storage*

The repair material shall be suitable for application at temperatures from 0 °C to 50 °C. It shall be suitable for use for a period of not less than 12 months when stored in UK ambient temperatures in original packaging.

blank

List of references (see clause 2)

Normative references

BSI publications

BRITISH STANDARDS INSTITUTION, London

BS 903 :	*Physical testing of rubber*
BS 903 : Part A3 : 1995	*Determination of tear strength (trouser, angle and crescent test pieces)*
BS 2782 :	*Methods of testing plastics*
BS 2782 : Part 3 :	*Mechanical properties*
BS 2782 : Methods 326A to 326C : 1977	*Determination of tensile strength and elongation of plastics films*
BS 2782 : Part 5 :	*Optical and colour properties, weathering*
BS 2782 : Method 540B : 1982	*Methods of exposure to laboratory light sources (xenon arc lamp, enclosed carbon arc lamp, open flame carbon arc lamp, fluorescent tube lamps)*
BS 2782 : Part 6 :	*Dimensional properties*
BS 2782 : Method 630A : 1994	*Determination of thickness by mechanical scanning of flexible sheet*
BS 2782 : Method 631A : 1993	*Determination of gravimetric thickness and yield of flexible sheet*
BS 3900 :	*Methods of test for paints*
BS 3900 : Part F6 : 1976	*Notes for guidance on conduct of natural weathering test*
BS 4800 : 1989	*Schedule of paint colours for building purposes*
BS 4816 : 1972	*Method for the determination of the puncture resistance of board*
BS 5350 :	*Methods of test for adhesives*
BS 5350 : Part C5 : 1990	*Determination of bond strength in longitudinal shear*
BS 5350 : Part C12 : 1994	*180 ° 'T' peel test for a flexible-to-flexible bonded assemblies*
BS EN ISO 9000	*Quality systems*

Other references

[1] ASTM G14 *Standard test method for impact resistance of pipeline coatings (falling weight test)*, American Society for Testing and Materials, 1988[4)]

[4)] Available from BSI Customer Services (details on back cover).

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL