BRITISH STANDARD

BS 5131 : Section 1.3 : 1991

Methods of test for

Footwear and footwear materials

Part 1. Adhesives

Section 1.3 Preparation of test assemblies using adhesives (other than hot melt adhesives) for heat resistance (creep) and peel tests

NOTE. It is recommended that this Section should be read in conjunction with BS 5131 : Part 0, published separately.

Méthodes d'essais des chaussures et matériaux pour chaussures
Partie 1. Colles
Section 1.3 Préparation des assemblages d'essai collés (à colles autres que thermofusible autoadhesive) pour essais de résistance (fluage) et de pelage

Prüfung von Schuhwerk und Schuhwerkstoffen
Teil 1. Klebstoffe
Abschnitt 1.3 Herstellung von Probekörpern mit Klebstoff (außer Schmelzklebstoff) zur Prüfung der Wärmebeständigkeit und des Schälwiderstandes

BSI STANDARDS

Foreword

This Section of BS 5131 has been prepared under the direction of the Textiles and Clothing Standards Policy Committee. It supersedes BS 5131 : Subsection 1.1.3 : 1976, which is withdrawn.

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

Contents

Method

1 Scope

This Section of BS 5131 describes methods for preparation of the test assemblies required by Sections 1.1 and 1.2 for determination, respectively, of the resistance of bonded joints to heat (creep test) and to peeling. This Section includes methods for preparation of the adhesive and of the adherends. It covers most types of bonding used in the footwear industry except hot melt adhesive bonds which are covered in Section 1.7.

The types of bond include stuck-on bonds made by the use of applied adhesives (both solvent-based and water-based), injected-on bonds using thermoplastic sole materials, e.g. polyvinylchloride (PVC), thermoplastic rubber, and moulded-on direct vulcanized rubber sole bonds. The methods of preparation are applicable to a wide variety of combinations of materials, but the peel and creep tests of Sections 1.1 and 1.2 require at least one adherend to be flexible.

NOTE. The titles of the publications referred to in this standard are listed on the inside back page .

2 Principle

Rectangular pieces of adherend materials are prepared and bonded to form a test assembly from which the test specimens required by Sections 1.1 and 1.2 can be cut. Bonding may be by one of the following means:

(a) by the use of heat reactivated solvent-based adhesive;

(b) by the use of heat reactivated water-based adhesive;

(c) by injection moulding of thermoplastic rubber or PVC;

(d) by direct moulding-on a vulcanizing rubber compound.

A paper or tape insert is incorporated in each bonded assembly to provide non-bonded legs which can be gripped.

3 Apparatus and materials [1)]

3.1 *Cutting device,* consisting of a sharp hand knife.

3.2 *Roughing device,* consisting of either:

(a) a sharp rotary wire brush, with wire of 0.375 mm diameter (28 SWG) and having a linear roughing speed of 10 m/s to 25 m/s;

(b) 80 grit abrasive paper, complying with BS 871 and mounted on a roller with a surface speed of 10 m/s to 25 m/s.

3.3 *Cotton wool pad.*

3.4 *Solvent for surface preparation,* consisting of either methyl ethyl ketone (preferred) or ethyl acetate (allowed).

3.5 *Strip of paper or adhesive tape.*

3.6 *Solvent based halogenation primer.*

3.7 *Brush,* with stiff bristles and with no metal parts or metal-coated parts.

3.8 *Brush,* with soft bristles and with no metal parts or metal-coated parts.

NOTE. There are indications that traces of some metals will degrade or catalyse degradation of some constituents of some primers, hence the requirement that the brushes do not contain metal parts or metal-coated parts.

4 Preparation of adherends

4.1 General

4.1.1 *Preparation and techniques*

To form a strong bond it is usually necessary to prepare the surface of the adherend so as to remove contaminants and weak surface layers, thereby rendering the bonding surface accessible to, or compatible with, the adhesive. The most common techniques are roughing of the surface by mechanical means and cleaning of the surface by wiping with a suitable solvent. Clauses **4.1.3** and **4.1.4** give the techniques for these two preparation methods. Clause **4.2** gives the preparation method which is appropriate for the different adherends together with instructions relating to priming.

4.1.2 *Number and size of test assemblies*

4.1.2.1 *Creep testing*

4.1.2.1.1 Produce sufficient test assemblies so that, for each test condition being investigated (see clause **9** of Section 1.1 : 1991), 15 test specimens 30.0 ± 0.5 mm by approximately 100 mm can be cut from the test assemblies.

4.1.2.1.2 Mechanical surface preparation (referred to as roughing) often produces irregular edges. Consequently, where roughing of adherend material is required (see **4.1.1**) first cut the adherend material using a suitable cutting device (**3.1**) into rectangles approximately 70 mm by 100 mm (preferred) or approximately 70 mm by a multiple of 100 mm (allowed) in order that the test assemblies will be of the dimensions shown in figures 1.3/1 or 1.3/2. Cut the adherend material in the same direction for each test assembly.

[1)] For information on the availability of suitable apparatus and materials including adherends to perform this test, apply to Enquiry Section, Linford Wood, Milton Keynes, MK14 6LE quoting the number of this standard and the clause number referring to the items concerned. Enclose a stamped addressed envelope for reply.

4.1.2.1.3 Where roughing of adherend material is not required (see **4.1.1**) either:

(a) prepare the specimens in accordance with **4.1.2.1.2**; or

(b) cut the adherend material into rectangles 30.0 ± 0.5 mm by approximately 100 mm.

Thus, the test assemblies will be of the dimensions shown in figures 1.3/1, 1.3/2 or 1.3/3. Cut the adherend material in the same direction for each test assembly.

NOTE 1. Preparation in accordance with **4.1.2.1.2** ensures that all the edges of the test specimens will be cut after mechanical surface preparation of the adherend has been carried out, thereby ensuring that the test specimens do not have any irregular edges.

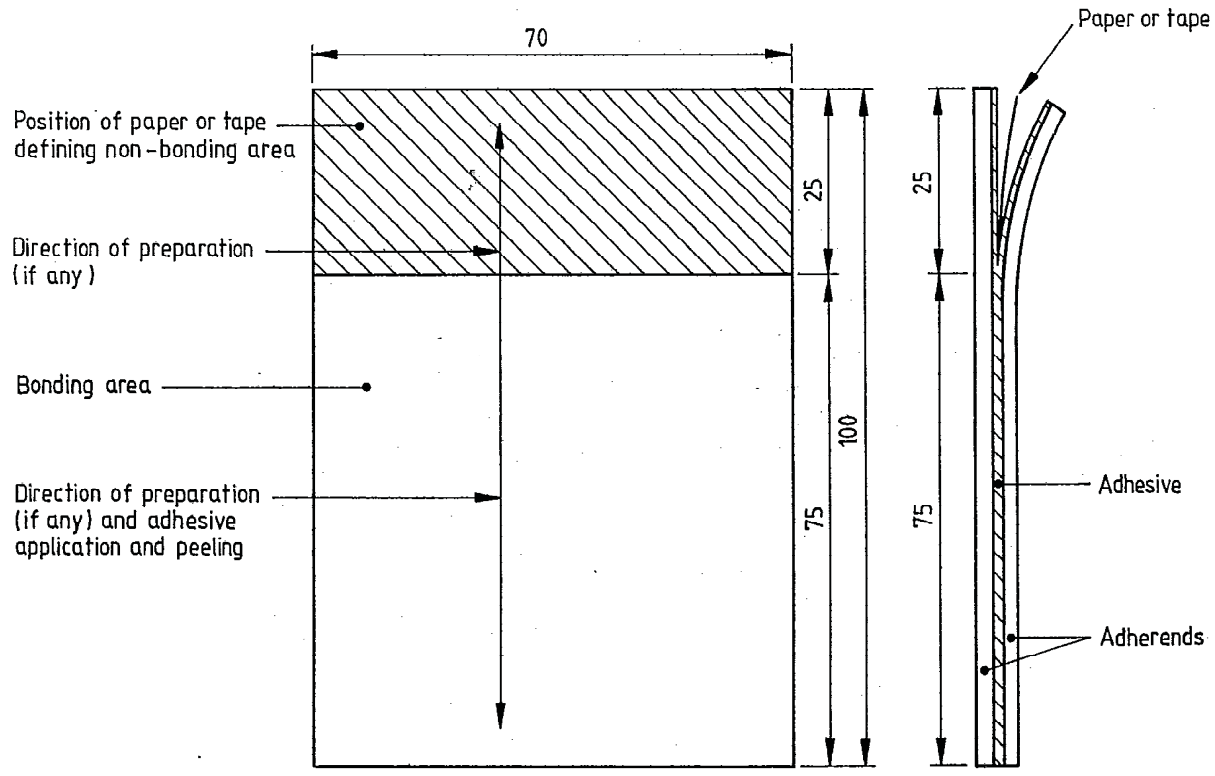
NOTE 2. In a few cases the direction of cutting affects the peel strength result, notably polyurethane (PU) coated fabric uppers and cellulose board insoles. In such cases, treat each cutting direction as a different test condition.

4.1.2.2 *Peel testing*

Produce sufficient test assemblies so that, for each test condition being investigated (see Section 1.2), four test specimens 30.0 ± 0.5 mm by approximately 50 mm can be cut from the test assemblies. Proceed as described in **4.1.2.1.2** and **4.1.2.1.3**, but with these dimensions, in order that the test assemblies will be of the dimensions shown in figures 1.3/4, 1.3/5 or 1.3/6.

4.1.3 ***Roughing***

Support the rectangles of material on a smooth flat block and rough the surface to be bonded in two directions, each of which is parallel to the subsequent direction of peeling or bond separation and each of which is from the approximate centre of the non-bonding area to the edge of the rectangle, as illustrated in figures 1.3/1, 1.3/2, 1.3/4 or 1.3/5. Rough using a suitable roughing device (**3.2**). Ensure that the face to be bonded is



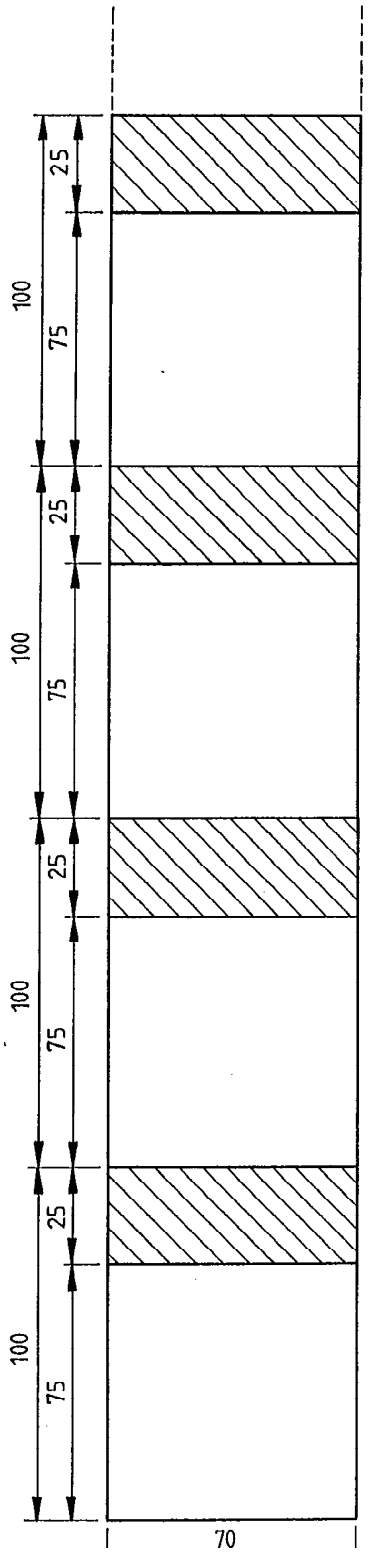
(a) Plan view of test assembly

(b) Side view of test assembly

All dimensions are in millimetres.

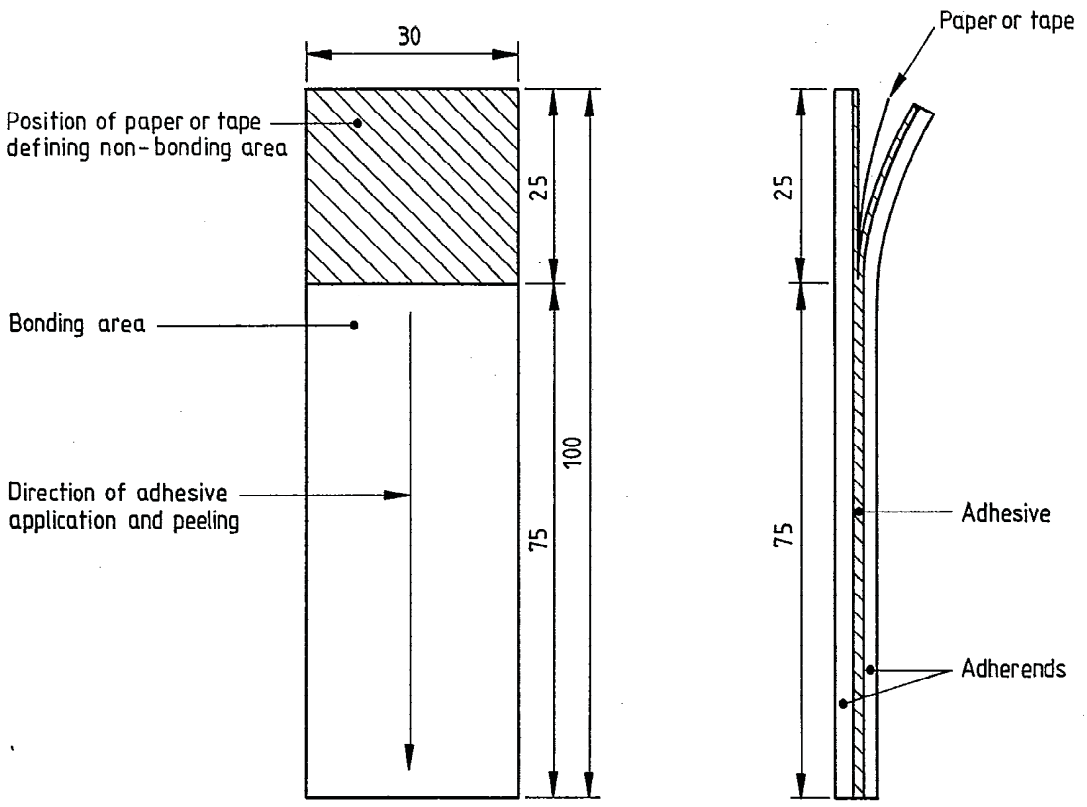
NOTE. Immediately after preparation, the non-bonding area of the test assembly will normally be lightly bonded. However, to illustrate the layers more clearly, figure (b) has been shown with the adherends separated.

Figure 1.3/1 Preferred test assembly for creep testing



All dimensions are in millimetres.

Figure 1.3/2 Plan of allowed test assembly for creep testing



(a) Plan view of test assembly

(b) Side view of test assembly

All dimensions are in millimetres.

NOTE. Immediately after preparation, the non-bonding area of the test assembly will normally be lightly bonded. However, to illustrate the layers more clearly, figure (b) has been shown with the adherends separated.

Figure 1.3/3 Allowed test assembly for creep testing where mechanical surface preparation is not required

roughed over its entire area. In the case of the test assemblies for the creep test, ensure that the surface is level at the boundary where the two directions of roughing meet or overlap. (See note 1.) In the case of the test assemblies for the peel test, ensure that the boundary where the two directions meet or overlap is within that area which will be subsequently covered by the paper or tape insert. (See note 2.)

NOTE 1. The adherends are bonded to each other at the boundary where the two directions of roughing overlap but provided that there are no apparent ridges or troughs (which could be produced if there was material which had not been roughed, or had been heavily roughed twice at a place where roughing overlapped) the test results will not be affected.

NOTE 2. The adherends are not bonded to each other at the boundary where the two directions of roughing overlap, this being prevented by the paper or adhesive tape insert.

4.1.4 *Solvent wiping*

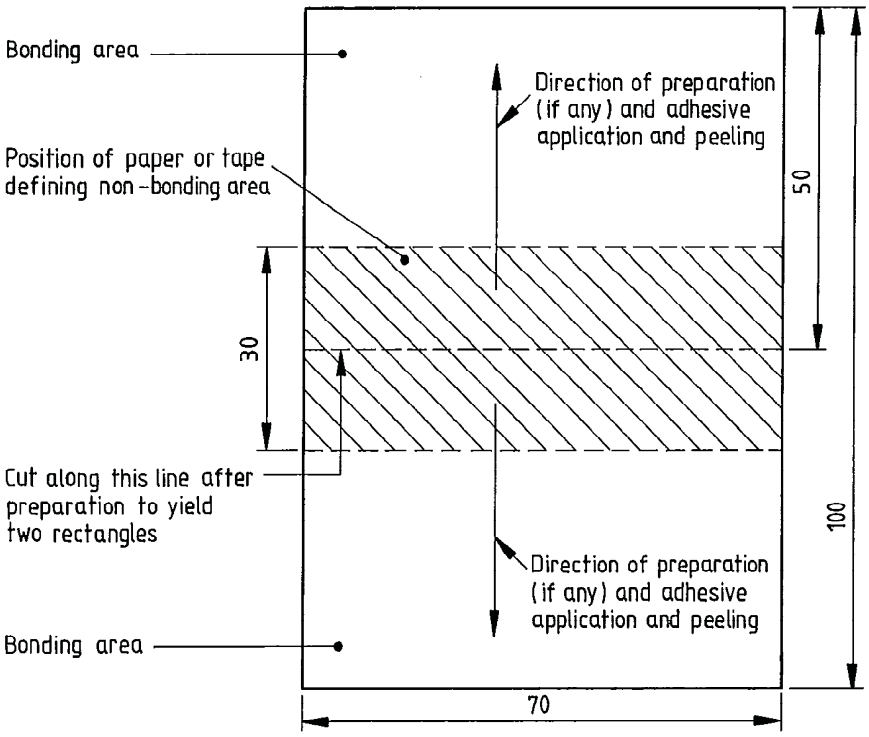
Soak a cotton wool pad (**3.3**) with the solvent (**3.4**). Wipe the surface of the material to be bonded avoiding flooding but ensuring the removal of any contaminants. Leave the material for a sufficient time to permit evaporation of all solvent residues before bonding.

NOTE. Evaporation of solvent residues normally takes about 15 min.

4.1.5 *Insertion of paper or adhesive tape*

At a suitable point in the preparation procedure (that is, either immediately before or immediately after applying the adhesive) insert a strip of paper or adhesive tape (**3.5**). Insert it in the appropriate position on the adherend in order to permit the opening of the end of the test specimen thereby providing legs to enable the test apparatus to grip the two outer layers of the test specimen. If this insertion is carried out using paper and before adhesive is applied, staple the paper in place.

Where it is desired in peel testing to measure the force necessary to break through the surface of an



All dimensions are in millimetres.

Figure 1.3/4 Plan of preferred test assembly for peel testing

adherend, e.g. some coated fabrics, as well as the subsequent average peeling force, apply paper, by stapling, or adhesive tape before application of adhesive to that adherend. For peel testing where this is not desired, apply a strip of paper or adhesive tape at the appropriate position (as shown in figures 1.3/1, 1.3/2 and 1.3/3) on one of the adherends, usually the upper material, at right angles to the direction of roughing after application of the adhesive.

For injected-on PVC bonds, use adhesive tape: for direct moulded-on rubber bonds, staple the paper insert to the upper material.

NOTE. The use of adhesive tape or paper with a staple is to provide an insert which does not lift during moulding. The insert is subsequently bonded in the test assembly but will facilitate opening of the bond when the test specimen is tested.

4.2 Surface preparation methods for specific materials

4.2.1 *Leather materials for upper and sole*

Apply the following treatment to each type of leather as follows.

(a) *Upper leather.* Remove the finish and the grain by roughing as described in **4.1.3** until the strong fibres of the corium are exposed.

(b) *Sole leather.* Rough the flesh side and remove loose fibres.

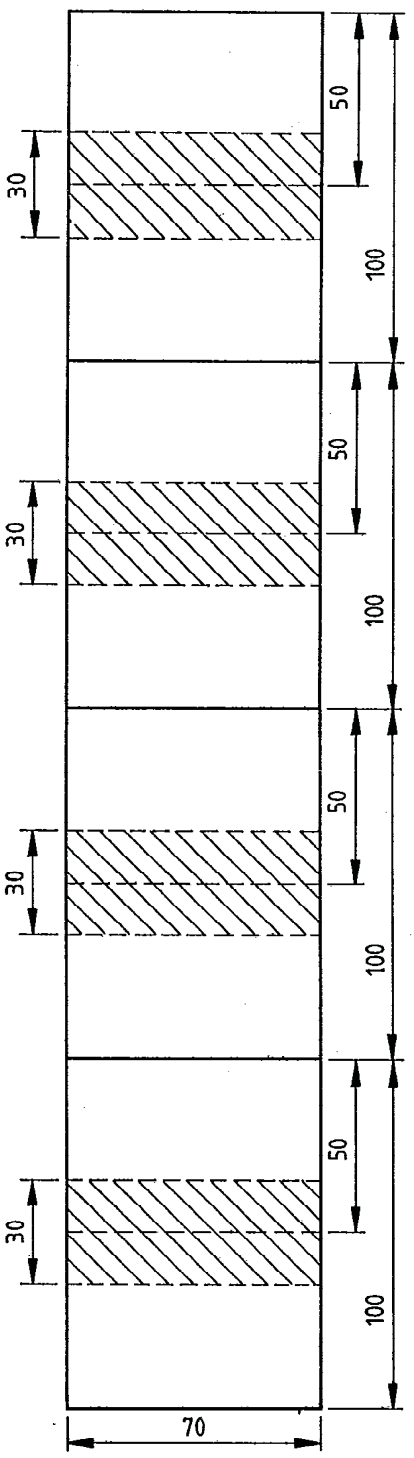
(c) *Reverse suedes and suede splits with a surface of raised corium fibres.* Do not carry out any preparation.

(d) *Grain suedes.* Remove the remainder of the grain by roughing as described in **4.1.3** so as to produce a surface of raised corium fibres.

(e) *Splits with a plastic finish.* Rough as described in **4.1.3** so as to produce a surface of raised corium fibres.

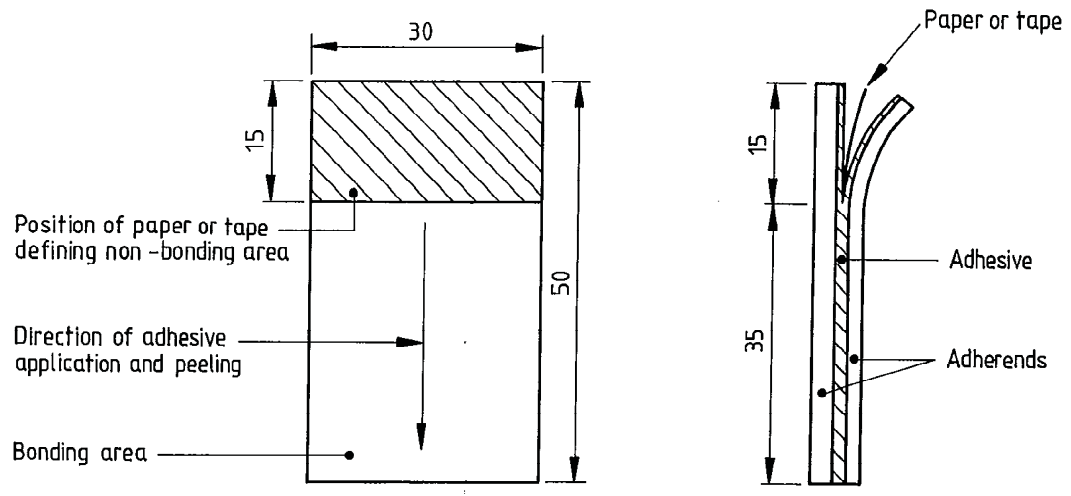
(f) *Polyurethane (PU) coated leathers.* Using sufficient material to produce the number of test assemblies given in **4.1.2**, remove all the PU coat and any remaining leather grain by roughing as described in **4.1.3**. Use the same amount of material again, but in this case solvent wipe the surface as described in **4.1.4** leaving the surface intact, thereby allowing a second set of test assemblies to be produced so as to determine whether the roughed material or the intact material gives a stronger bond.

(g) *PVC coated leathers.* Prepare by solvent wiping as described in **4.1.4**.



All dimensions are in millimetres.

Figure 1.3/5 Plan of allowed test assembly for peel testing



(a) Plan view of test assembly

(b) Side view of test assembly

All dimensions are in millimetres.

NOTE. Immediately after preparation, the non-bonding area of the test assembly will normally be lightly bonded. However, to illustrate the layers more clearly, figure (b) has been shown with the adherends separated.

Figure 1.3/6 Allowed test assembly for peel testing where mechanical surface preparation is not required

4.2.2 ***Rubber soling***

NOTE. Rubber soling includes resin rubber, thermoplastic rubber, microcellular rubber, moulded rubber units and solid and blown gristle rubber.

4.2.2.1 *General*

Depending on the type of adhesive, prepare the surface of the adherend as described in **4.2.2.2**, **4.2.2.3** or **4.2.2.4**, as appropriate, unless the adhesive manufacturer gives different instructions, e.g. the use of a special primer, in which case follow these and include them in the test report.

Do not leave rubber which has been freshly prepared by roughing for longer than 1 h before the application of adhesive.

4.2.2.2 *Polychloroprene adhesive*

Prepare the adherend (if the adherend is not natural crepe rubber) by roughing the surface as described in **4.1.3**. As an option, in the case of microcellular rubber, 40 grit abrasive paper may be used in place of the 80 grit abrasive paper quoted in **3.3**.

4.2.2.3 *Polyurethane adhesive*

Prepare the adherend (if the adherend is not natural crepe rubber) by treating the surface with solvent-based halogenation primer (**3.6**) applying the primer with a stiff bristle brush (**3.7**) unless the adherend consists of thermoplastic rubber, in which case use a soft bristle brush (**3.8**), with gentle action. If the treated surface is thermoplastic rubber, leave it for 30 min at room temperature before applying the adhesive. In the case of other materials, leave the treated surface for at least 15 min at room temperature before applying the adhesive.

4.2.2.4 *Adherend of natural crepe rubber*

Where the adherend is natural crepe rubber, use either a special crepe primer or the halogenation priming technique described in **4.2.2.3** for polychloroprene adhesive as well as for polyurethane adhesive.

4.2.3 ***PVC sole materials***

Solvent wipe as described in **4.1.4**. In the case of cellular PVC, either rough lightly as described in **4.1.3** or solvent wipe as described in **4.1.4**.

4.2.4 ***PVC upper materials***

Solvent wipe as described in **4.1.4**.

4.2.5 ***Cellular polyurethane soles***

Solvent wipe as described in **4.1.4** or rough as described in **4.1.3**.

4.2.6 ***Board insoles (all types)***

Do not carry out any preparation before application of the adhesive.

4.2.7 *Poromeric upper materials*

Rough as described in **4.1.3**. Rough to the extent given as follows:

(a) rough to the woven layer, if present;

(b) rough into the surface cellular layer, if no woven layer is present;

(c) rough as otherwise recommended by the manufacturer.

4.2.8 *Polyurethane-coated fabrics*

Rough as described in **4.1.3**, roughing to the base layer to remove the coating completely.

4.2.9 *Microcellular ethylene vinyl acetate (EVA)*

The preparation method depends on the adhesive to be used, i.e.

(a) For polychloroprene adhesives, rough as described in **4.1.3.**

(b) For polyurethane adhesives, use a special EVA primer or wipe with isocyanate primer. If experience indicates that adhesion to a particular material is difficult, rough as described in **4.1.3** before using the primer.

4.2.10 *Textiles*

Most textiles require no preparation prior to bonding but in the case of nylon (polyamide) and some other synthetic materials it may be necessary to rough the surface lightly or to apply a primer or both.

5 Preparation and application of solvent-based and water-based adhesives

5.1 General

Solvent-based and water-based adhesives are used to prepare test assemblies incorporating the following types of bond:

(a) stuck-on sole bonds and other bonds in which both adherends are adhesive coated (commonly referred to as two-way bonding), the adhesive being subsequently heat reactivated in the bonding process;

(b) injected-on bonds in which adhesive is applied to the upper material only, the adhesive being subsequently heat reactivated in the bonding process;

(c) direct vulcanized bonds in which adhesive is applied to the upper material only, the adhesive being subsequently heat reactivated in the bonding process;

(d) bonds which are not injected-on bonds and are not direct vulcanized bonds but in which adhesive is applied to one adherend only (commonly referred to as one-way wet stick bonding), and the bond is allowed to form without heat reactivation.

5.2 Preparation

The adhesive may have one or two components. Stir each component thoroughly and reject if it is not homogeneous.

If the adhesive has two components, weigh the main component into a suitable separate container and add the second component in the amount recommended by the adhesive supplier. Stir thoroughly. Use the adhesive within the pot life described by the supplier.

5.3 Application

Apply the adhesive to both adherends in the case of two-way bonding (see item (a) of **5.1**).

Apply the adhesive to the upper material in the case of injected-on or direct vulcanized bonding (see items (b) and (c) of **5.1**).

Apply the adhesive to the adherend which will receive the adhesive in the factory procedure being simulated in the case of one-way wet stick bonding (see item (d) of **5.1**).

Apply the adhesive to the adherend by brushing, or by an alternative method such as spraying or roller coating where such an alternative method of adhesion is to be evaluated, e.g. where water-based adhesives are used. Where the adhesive is to be applied by brushing, ensure that the adhesive is applied by brushing in both directions parallel to the direction of roughing and in sufficient quantity to ensure that after absorption of the adhesive by the surface of the adherend there remains on the surface a discernible layer of adhesive. Use one coat of adhesive except for leather or other highly absorbent adherends where two coats of adhesive may be needed. Ensure that the paper or tape (see **4.1.5**) has been inserted.

5.4 Open time

NOTE. The open time is the time interval between applying the adhesive and assembling the bond. For bonds which are to be made using heat, the adhesive needs to be dry but still capable of having its bonding properties restored by heat. Because the creep test is carried out at an elevated temperature, drying is particularly important, since traces of solvent in the adhesive film would evaporate during the test causing some damage to the bond. As a consequence, a long open time has been adopted. For one-way wet stick bonds, the adhesive needs to be wet so that it will satisfactorily penetrate into the surface of the second adherend. As a consequence, a very brief open time has been adopted. One-way wet stick bonds are used during shoe manufacture for operations, e.g. sock insertion, which are done by hand. The appropriate open time depends on the properties of the adhesive and to some extent on the nature of the adherends.

5.4.1 *Bonds other than one-way wet stick bonds*

Where the test assembly is to be used to prepare test specimens for peel testing, use an open time of 1 h for solvent-based adhesives (except in the case of thermoplastic rubber) and 2 h for water-based adhesives (and for solvent-based adhesives used on thermoplastic rubber) unless otherwise recommended by the adhesive manufacturer. If it is

required to test the bonding properties of upper leather, use an open time of 24 h for both upper and sole.

Where the test assembly is to be used to prepare test specimens for heat resistance (creep) testing, use an open time of 24 h unless advised otherwise by the adhesive manufacturer.

5.4.2 ***One-way wet stick bonds***

Make the bond immediately or within 2 min after applying the adhesive to one adherend, thereby ensuring that the second adherend is satisfactorily wetted.

6 Bonding the test assembly

6.1 Stuck-on bonds with heat-reactivated solvent-based or water-based adhesive

6.1.1 ***Principle***

The dry adhesive film on one, or sometimes both, adherends is reactivated by heating, the adherend surfaces are then brought together, and the assembly is then pressed to form the bond.

6.1.2 ***Applicability***

The procedure described in **6.1** is applicable to bonds where both adherends are adhesive coated (two way bonding).

6.1.3 ***Apparatus***

6.1.3.1 *Heat reactivator,* consisting of a radiant heater capable of heating the adhesive film to 80 °C to 90 °C within 15 s. A 3 kW infra-red heater acting over a 300 mm by 150 mm area and at a distance of 100 mm to 150 mm, and a quartz high intensity infra-red heater (flash heater) have each been found suitable.

6.1.3.2 *Device for measuring the temperature* of the adhesive films, e.g. heat sensitive crayons.

6.1.3.3 *Bonding press,* capable of applying a pressure of 500 kPa to 600 kPa to each adhesive assembly. The bottom platen of the press is equipped with a pad of rubber, at least 10 mm thick and of hardness between 30 IRHD and 50 IRHD when measured as described in BS 903 : Part A26, to compensate for any non-uniformity in the thickness of the assemblies.

6.1.4 ***Procedure***

After the open time (see **5.4**) has elapsed, heat reactivate the adhesive film on the sole material adherend to a surface temperature of 80 °C to 90 °C within 15 s except in special cases. In such cases, use different reactivation conditions, either to comply with the recommendations of the adhesive supplier or to simulate factory procedures. Record these conditions. Alternatively, to simulate factory procedures, heat reactivate the adhesive film on the upper material to a surface temperature of 80 °C to 90 °C within 15 s: record that this operation has been carried out.

Remove the adherend from the reactivator and place it on the other adherend, taking care to align the coated surfaces as closely as possible. Place the aligned assembly in the press (with the upper material adjacent to the top platen and the sole material adjacent to the rubber pad). Apply the full pressure within 7 s of removal from the heat reactivator. Bond at 500 kPa to 600 kPa for 15 ± 1 s, then remove the bonded assembly from the press.

6.2 Injected-on bonds (direct injection moulding of thermoplastic soling materials)

6.2.1 ***Principle***

The thermoplastic soling material, commonly PVC or thermoplastic rubber, is injection moulded onto the upper material using a special rectangular slab shaped mould. This forms the sole portion of the test assembly and bonds it to the upper. The upper material is coated with an adhesive prior to moulding.

6.2.2 ***Adherends***

Use a soling compound of injection moulding grade, and a second adherend (upper material) prepared as described in clause **4** with adhesive prepared and applied as in clause **5**.

6.2.3 ***Moulding machine***

Use a machine capable of injection moulding thermoplastic soling compounds and fitted with moulds to form a flat plaque. Ensure that the cavity size is consistent with the requirements of Section 1.1 or 1.2 as appropriate, e.g. 70 mm by 100 mm if the test specimens are to be cut from the preferred size of test assembly as shown in figures 1.3/1 and 1.3/4.

Ensure that the cavity produces a moulded assembly of total thickness 5.0 ± 0.5 mm. For machines in which the bottom plate is refrigerated and the side plates are uncooled, use an injection cycle of approximately 10 ± 2 s and a cooling time of approximately 90 ± 10 s.

6.2.4 ***Procedure***

Thoroughly purge the moulding machine of any old soling compound. Fasten the upper material (adhesive-coated side uppermost) to the mould with twin-sided tape so that molten soling compound does not get beneath the upper material and spoil the moulding. To improve the consistency of the bonds, place the adherend rectangles on the plate so that the edge with the adhesive tape insert shown in figures 1.3/1, 1.3/2 and 1.3/3 (attached to facilitate bond opening) is nearest to the injection point of the plastic.

Using moulding conditions that are in accordance with the recommendations of the suppliers of the soling compound, inject the soling compound. When the moulds open, remove the test assembly, handling it with great care to avoid disturbing the adhesive (which may still be warm) and thus damaging the bond.

6.3 Direct vulcanized rubber moulded-on bonds

6.3.1 *Principle*

The vulcanizable rubber soling material is compression moulded onto the upper material using a rectangular slab-shaped mould, forming the vulcanized rubber sole portion of the test assembly and bonding it to the upper.

6.3.2 *Adherends*

These consist of unvulcanized rubber sheets suitable for making direct moulded-on rubber soles and a second adherend (upper material) prepared as described in clause **4** with adhesive prepared and applied as in clause **5**. The size of the adherends is sufficient to cover the bottom of the mould cavity and to produce a moulding of the thickness described in **6.3.3.1**.

6.3.3 *Moulding equipment*

6.3.3.1 *Mould*

This consists of a base with sides for holding the rubber and the upper material during the moulding process and with a lid for applying pressure and determining the thickness of the moulded assembly. The cavity size is consistent with the dimensions of the test specimens required in Section 1.1 or Section 1.2 as appropriate, e.g. 70 mm by 100 mm if the test specimens are to be cut from the preferred size of test assembly as shown in figures 1.3/1 and 1.3/4.

The mould produces a test assembly with a rubber thickness of 3.5 ± 0.5 mm at all points where the rubber is bonded to the upper material adherend.

6.3.3.2 *Press*

This is capable of exerting 3.5 MPa to 4.2 MPa over the cavity area of the mould and has facilities for heating its platens. The temperature to be used depends on the particular rubber compound to be moulded but the lower platen is normally at a temperature of 105 ± 5 °C and the upper platen is normally at a temperature of 180 ± 5 °C. During moulding, the upper material side of the test assembly is adjacent to the lower temperature (bottom) platen and the unvulcanized rubber is adjacent to the higher temperature (top) platen.

6.3.4 *Procedure*

Place the empty mould with its base on the bottom platen of the press and close the press so that the top platen contacts the mould lid. Heat the press until the two platens reach the required temperatures and record these temperatures. Cut a rectangle of unvulcanized rubber sufficient to fill the mould after vulcanization and preheat it in an oven at 75 ± 10 °C for 10 min. Open the press, and remove and open the mould. Quickly lay the prepared upper material adherend, prepared side uppermost, in the bottom of the mould and lay the sheet of unvulcanized rubber on top. Replace the mould lid and insert the mould in the press. Apply and maintain a pressure of 3.5 MPa to 4.2 MPa over the cavity area of the mould for the time recommended for bonding by the rubber supplier. Remove the mould at the end of this time and remove the bonded assembly from the mould, taking care to avoid damaging the bonded assembly.

6.4 One-way wet stick bonds

6.4.1 *Principle*

Adhesive is applied to one adherend, and the second adherend is pressed onto the first adherend by finger pressure whilst the adhesive surface is still capable of wetting the surface of the second adherend.

6.4.2 *Procedure*

After the open time, press the two adherends together using finger pressure for a period of 2 s to 5 s.

7 Storage of test assemblies

Store the test assemblies (cooled to room temperature, if necessary) under the atmospheric conditions required by Section 1.1 or 1.2 as appropriate. Store the test assemblies so that they are separated from each other.

Immediately before testing, cut away any excess sole material from injected-on or moulded-on test assemblies and then cut the test specimens as described in Section 1.1 or 1.2 as appropriate.

Publications referred to

BS 871	Specification for abrasive papers and cloths
BS 903	Methods of testing vulcanized rubber Part A26 Determination of hardness
BS 5131	Methods of test for footwear and footwear materials Part 1 Adhesives Section 1.1 Resistance of adhesive joints to heat (creep test) Section 1.2 Resistance of adhesive joints to peeling [1]Section 1.7 Preparation of test assemblies using hot melt adhesives for heat resistance (creep) and peel tests

[1] In preparation.

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Textiles and Clothing Standards Policy Committee (TCM/-) to Technical Committee TCM/39, upon which the following bodies were represented:

British Footwear Manufacturers' Federation
British Leather Confederation
British Rubber Manufacturers' Association
British Steel plc
Consumer Standards Advisory Committee of BSI
Cork Industry Federation
Footwear Components Federation
Footwear Distributors' Federation
Institute of Trading Standards Administration
Iron and Steel Trades Confederation
Lancashire Footwear Manufacturers' Association
Mail Order Traders Association of Great Britain
Ministry of Defence
National Union of Footwear, Leather and Allied Trades
Office of Fair Trading
SATRA Footwear Technology Centre

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

British Adhesives and Sealants Association
British Paper and Board Industry Federation
British Plastics Federation
Multiple Shoe Retailers Association
RAPRA Technology Ltd.

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