

Self adhesive tapes — Measurement of peel adhesion from stainless steel or from its own backing

The European Standard EN 1939 : 1996 has the status of a
British Standard

ICS 83.180

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- British Adhesives and Sealants Association
- British Apparel and Textile Confederation
- British Coatings Federation Ltd.
- British Fibreboard Packaging Association
- British Glass Manufacturers' Confederation
- British Industrial Truck Association
- British Plastics Federation
- British Retail Consortium
- British Rubber Manufacturers' Association Ltd.
- British Tensional Strapping Association Ltd.
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- Road Haulage Association Ltd.
- Society of Occupational Medicine
- Storage Equipment Manufacturers' Association
- Timber Packaging and Pallet Confederation
- Timber Research and Development Association
- United Kingdom Softwood Sawmillers' Association

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

- Adhesive Tape Manufacturers' Association
- British Footwear Manufacturers' Federation
- Packaging Distributors Association
- Pressure Sensitive Manufacturers' Association

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National foreword

This British Standard has been prepared by Technical Committee PKW/3 and is the English language version of EN 1939 : 1996 *Self adhesive tapes — Measurement of peel adhesion from stainless steel or from its own backing* published by the European Committee for Standardization (CEN).

Cross-reference

Publication referred to	Corresponding British Standard
EN 1942 : 1996	BS EN 1942 : 1996 <i>Self adhesive tapes — Measurement of thickness</i>

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN title page, pages 2 to 16, an inside back cover and a back cover.

ICS 83.180

Descriptors: Adhesive tapes, measurement, adhesive strength, adhesion tests, stainless steels

English version

Self adhesive tapes — Measurement of peel adhesion from stainless steel or from its own backing

Rubans auto-adhésifs — Mesure de pouvoir adhésif linéaire sur acier inoxydable ou sur son propre support

Klebebänder — Messung der Klebkraft auf nichtrostendem Stahl oder auf der eigenen Rückseite

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 253, Self adhesive tapes, the secretariat of which is held by 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 February 1997, and conflicting national standards shall be withdrawn at the latest by February 1997.

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

The European standard EN 1939 gives :

- the annex A (normative) Self adhesive tapes — Measurement of peel adhesion from its own backing
- the annex B (normative) Self adhesive tapes — Measurement of peel adhesion from stainless steel at low temperature
- the annex C (normative) Self adhesive tapes — Measurement of peel adhesion from stainless steel of double sided adhesive tapes
- the annex D (normative) Self adhesive tapes — Measurement of peel adhesion from stainless steel of an adhesive transfer tape
- the annex E (informative) Bibliography — FEPA — *Standard for coated abrasive grains of fused alumina and silicon carbide* 43-GB-1984

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1 Scope

This standard specifies the method to measure, under specified test conditions, the force required to remove an adhesive tape which has been applied to a standard metal surface.

This European Standard specifies the method of measurement, under specified test conditions, the force required to remove an adhesive tape which has been applied to:

- a standard metal surface;
- from its own backing;
- from stainless steel at low temperature;
- from stainless steel of double sided adhesive tapes; and
- from stainless steel of an adhesive transfer tape.

NOTE. For the purpose of facilitating the understanding of this standard, it has been divided into five separate test methods.

2 Definition

For the purposes of this standard the following definition applies.

peel adhesion

The force required to peel a strip of tape from a specified substrate at a specified angle and speed.

3 Principle

A length of adhesive tape is applied to a standard plate which is then fixed vertically in one clamp of a tensile testing machine. The other clamp of the machine pulls the free end of the adhesive tape at an angle of 180° to the plate.

The adhesive strength is measured by the force required to peel the adhesive tape continuously from the plate, the line of separation being perpendicular to the direction of the applied force.

4 Materials

4.1 Diacetone alcohol.

4.2 Lint free cotton wool or tissue.

4.3 One of the following solvents:

- methanol;
- methyl ethyl ketone;
- acetone;
- toluene.

Solvents shall be of general purpose chemical grade.

5 Apparatus

5.1 Tensile testing machine, with the following characteristics:

- the force shall be indicated with a maximum error of 2 %;
- the speed of the moveable clamp shall be 300 mm/min $\pm$ 30 mm/min;
- the scale shall be such that the readings obtained are between 15 % and 85 % of the complete scale;
- the clamps shall be serrated to prevent slipping or tearing of the tape;
- if a pendulum machine is used, ensure that the pendulum can swing freely.

5.2 Stainless steel plates¹⁾

These shall be perfectly flat, 200 mm long $\times$ 50 mm wide and 2 mm thick. They shall be made from 'polishing' quality stainless steel of a Brinell hardness ranging from 130 to 200 (see ISO 6506) and comprising the following constituents:

- carbon <0,12 %;
- nickel >8 %;
- chromium >17 %.

The testing surface of the plate shall first be polished to a mirror finish. It shall then be roughened with abrasive grit²⁾. The abrasion lines shall be parallel to the long edge of the plate. The plate shall be graduated on the long edges with five short marks spaced 30 mm apart, the first being 50 mm from one end. (This is referred to as the starting end in 7.3.2.)

Check that the surface conforms to the following conditions by five transverse measurements in the area between two imaginary lines 10 mm on each side of the longitudinal axis of the plate:

- mean range between 0,05 μ m and 0,40 μ m;
- maximum depth less than 4 μ m. Sampling length (of abraded area of test plate) is 0,8 mm;
- the evaluation length of five transverse samples provides the abraded area required to cover all possible variables in surface rugosity.

NOTE. A full explanation of these terms will be found in ISO 468 and ISO 4287-1.

Between each test, the plates shall be kept in such a way as to avoid any accidental scratching which may modify the surface condition.

5.3 Polished cylindrical metal roller

This shall have a diameter of at least 50 mm and a mass corresponding to 2 kg/cm width of adhesive tape under test.

¹⁾ Potential suppliers of tools/materials may be published by other organisations like AFERA (Association des Fabricants Européens de Rubans auto-adhésifs) 60 rue Auber 94408 VITRY SUR SEINE CEDEX.

²⁾ It is recommended to roughen the testing surface with Nr. 240 Type FEPA abrasive grit (see annex E). This information is given for the convenience of users of this standard and does not constitute an endorsement by CEN of this product type.