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## Self adhesive tapes — Determination of peel adhesion properties

*Rubans auto-adhésifs — Détermination des caractéristiques du pouvoir  
adhésif linéaire*



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## Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 29862 was prepared by the European Committee for Standardization (CEN) (as EN 1939) and was adopted, under a special "fast-track procedure", by the ISO Technical Management Board (TMB), in parallel with its approval by the ISO member bodies.

## Contents

	Page
Foreword .....	3
1 Scope .....	4
2 Normative references .....	5
3 Terms and definitions .....	5
4 Significance and use .....	5
5 Method 1 – Self adhesive tapes – Measurement of peel adhesion from stainless steel at an angle of 180° .....	6
6 Method 2 – Self adhesive tapes – Measurement of peel adhesion from its own backing at an angle of 180° .....	8
7 Method 3 – Self adhesive tapes - Measurement of peel adhesion of double sided and transfer tapes at an angle of 180° .....	10
8 Method 4 – Self adhesive tapes - Measurement of adhesion of the liner to an adhesive tape at an angle of 180° .....	11
Annex A (normative) Self adhesive tapes – Measurement of peel adhesion from a surface at low temperature .....	13
Annex B (normative) Self adhesive tapes – Measurement of peel adhesion from a surface at an angle of 90° .....	14

## Foreword

This document (EN 1939:2003) 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of an identical text or by endorsement, at the latest by January 2004 and conflicting national standards shall be withdrawn at the latest by January 2004.

In this European Standard the annexes A and B are normative.

This document supersedes EN 1443:1996.

This European Standard has been revised in conjunction with AFERA (Association of European self Adhesive tapes Manufacturers) in Europe and PSTC (Pressure Sensitive Tape Council) in USA with the purpose to produce a standard which will be acceptable in due course by ISO.

Key changes from EN 1939:1996 are:

- steel plates are revised to readily available, industry standard steel with a smoother surface finish;
- a lighter, rubber coated roller;
- dwell time before testing is more realistically specified at one minute;
- test data from the revised test will be generally lower than from EN 1939:1996.

NOTE The lower value obtained by the new method does not reflect any change in product performance.

The scope of the standard has also been extended to include:

- peel adhesion at an angle of 90°;
- peel adhesion of a liner to an adhesive tape.

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.

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## 1 Scope

This European Standard specifies a series of methods for the determination of peel adhesion properties of self adhesive tapes.

Annexes A and B specify further variations in the testing protocol according to specific conditions.

This European Standard contains:

- **Method 1:** Self adhesive tapes – Measurement of peel adhesion from stainless steel at an angle of 180° ;
- **Method 2:** Self adhesive tapes – Measurement of peel adhesion from its own backing at an angle of 180° ;
- **Method 3:** Self adhesive tapes – Measurement of peel adhesion of double sided and transfer tapes at an angle 180° ;
- **Method 4:** Self adhesive tapes – Measurement of adhesion of the liner to an adhesive tape at an angle of 180°.

Together with

- **Annex A** Self adhesive tapes – Measurement of peel adhesion from a surface at low temperature ;
- **Annex B** Self adhesive tapes – Measurement of peel adhesion from a surface at an angle of 90°.

A guide to the use of these methods and annexes is given in Table 1.

**Table 1 – Methods and annexes**

Method	Angle of peel	Temperature of test	
		23 °C	Low temperature
Method 1 Adhesion to steel	180°	-	Annex A
	90°	Annex B	-
Method 2 Adhesion to backing	180°	-	Annex A
	90°	Annex B	-
Method 3 Adhesion of double sided and transfer tape	180°	-	Annex A
	90°	Annex B	-
Method 4 Adhesion of liner	180°	-	Annex A
	90°	Annex B	-
<p>NOTE 1 These methods provide a means of assessing the uniformity of the adhesion of a given type of self adhesive tape. The assessment may be within a roll of tape, between rolls or between production lots.</p> <p>NOTE 2 Variations in the tape backing and adhesive affect the response. Therefore these methods cannot be used to pinpoint the specific cause(s) of non uniformity.</p> <p>NOTE 3 These test methods may not be appropriate to test tapes having either relatively stiff backings, stiff liners or backing showing high stretch at low forces. These characteristics will result in a high variability for the test response which is not a true indication of the real nature of the adhesive bond.</p>			

## 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 10088-2, *Stainless steels - Part 2: Technical delivery conditions for sheet/plate and strip for general purposes*.

EN 12481:2000, *Self adhesive tapes - Terminology*.

## 3 Terms and definitions

For the purposes of this European Standard the terms and definitions given in EN 12481:2000 and the following terms and definitions apply.

### 3.1

#### **peel adhesion**

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

### 3.2

#### **open side (adhesive)**

surface of the adhesive on a double sided tape which is exposed on normal unwinding or separation of the first liner

### 3.3

#### **closed side (adhesive)**

surface of the adhesive on a double sided tape which normally remains in contact with the release liner on normal unwinding or separation of the first liner

### 3.4

#### **transfer tape**

adhesive tape having two available pressure sensitive surfaces without the need for a carrier and with a release liner separating the adhesive surfaces. The adhesive may contain reinforcing material

## 4 Significance and use

These test methods are tools for quality control use. Given specific self adhesive tape and a requirement in terms of the minimum or maximum value expected for this tape, the data from the test can be used in conjunction with acceptance criteria.

Test methods 1, 2, 3, and Annexes A and B can show the relative bond strength of a given tape to one or more surfaces (material and texture) as compared to the standard stainless steel panel. Substitution of representative samples of materials in question for the standard steel panel would suffice to do this. Test methods 1, 2, 3, and Annexes A and B cannot be used to compare two self adhesive tapes of the same type but of different manufacture for their ability to adhere to a surface. This is because the measured peel force is not normalised for a fixed area of stress. The area under stress varies with backing stiffness and adhesive rheology (firmness). Two different tapes seldom agree in these properties.

Test method 4 can show the amount of force required to remove a liner that covers the adhesive side of a tape at a specified peel rate. The force will be different at other peel rates.

These test methods may not provide design information as there is usually no direct relationship between peel adhesion and any functional requirement.