



**SLOVENSKI STANDARD**  
**SIST EN 1943:1997**  
**01-avgust-1997**

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**Samolepilni trakovi - Merjenje statične strižne lepljivosti**

Self-adhesive tapes - Measurement of static shear adhesion

Klebebänder - Messung des Scherwiderstandes unter statischer Belastung

Rubans auto-adhésifs - Mesure du pouvoir adhésif tangentiel

**Ta slovenski standard je istoveten z: EN 1943:1996**

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**ICS:**

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## Self adhesive tapes - Measurement of static shear adhesion

Rubans auto-adhésifs  
adhésif tangentiel

Mesure du pouvoir

Klebebänder - Messung des Scherwiderstandes  
unter statischer Belastung

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REPUBLIKA SLOVENIJA  
MINISTRSTVO ZA ZNANOST IN TEHNOLOGIJO  
Urad RS za standardizacijo in meroslovje  
LJUBLJANA

SIST..... EN 1943 .....

PREVZET PO METODI RAZGLASITVE

-08- 1997

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# CEN

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

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## Foreword

This European Standard has been prepared by Technical Committee CEN/TC 253 "Self adhesive tapes" of which the secretariat is held by AFNOR.

The standard EN 1943 gives :

- the annex A (normative) Self adhesive tapes - Shear adhesion of double sided adhesive tape.

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of an identical text or by endorsement, at the latest by August 1996, and conflicting national standards shall be withdrawn at the latest by August 1996.

According to the CEN/CENELEC International Regulations, 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.

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## 1 Scope

This standard specifies a method to measure the force required to cause an adhesive tape to slip in shear from a specified metal surface to which the adhesive tape has been applied under standard test conditions, in two conditions of different temperatures 23 °C and 70 °C.

An annex A is attached which shall be followed when testing double side adhesive tape.

## 2 Normative reference

This European Standard incorporates by dated or undated reference, provisions from the 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.

PrEN 1939 Self adhesive tapes - Measurement of peel adhesion from stainless steel or from its own backing.

## 3 Definition

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For the purposes of this standard, the following definition applies :

**shear adhesion** : The resistance of the pressure sensitive adhesive against shear when forces are exerted parallel to the bonding surface.

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## 4 Principle

The adhesive tape is applied to a nearly vertical standard stainless steel plate and subjected to a shearing force, parallel to the edges of the adhesive tape, by means of a given mass suspended from the test piece.

## 5 Materials

- 5.1 Diacetone alcohol.
- 5.2 Lint free cotton wool, or tissue.
- 5.3 One of the following solvents :

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

Solvents shall be of general purpose chemical grade.

## 6 Apparatus

### 6.1 Plate holder

A device for maintaining the plates at an angle  $2^\circ$  from the vertical in order to obtain an angle of  $178^\circ$  between the back of the plate and the hanging portion of the test piece. (See figure 1).

The plate holder shall be stored in a ventilated cupboard.

### 6.2 Load masses and clips

The actual load for this test shall be the overall mass of the load mass plus clip. The clip shall be designed to prevent any slippage during the test.

Masses selected from the sets listed below shall be used for the tests :

- for sets of masses below 500 g : use 50 g increments ;
- for sets of masses between 500 g and 1000 g : use 100 g increments ;
- for sets of masses between 1000 g and 2000 g : use 200 g increments ;
- for sets of masses above 2000 g : use 500 g increments.

The selection of the most suitable set of masses for the tape under test shall be carried out by means of a preliminary test in which the following masses 500 g, 1000 g, 2000 g, 4000 g, 8000 g are applied one to each of the five adhesive tape test pieces.

The range to be used for the actual test shall be deduced from the slippage observed after 4 hours test.

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### 6.3 Stainless steel plates

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The plates shall be the same as those used for the measurement of peel adhesion of adhesive tape from stainless steel. (See prEN 1939).

### 6.4 Polished cylindrical metal roller

This shall have a diameter of at least 50 mm and a mass of 5 kg.

### 6.5 Instrument for cutting the test pieces

After application to the plate, so as to obtain a contact area of exactly 25 mm x 25 mm.

### 6.6 Oven

Capable of maintaining a temperature of  $70^\circ\text{C} \pm 2^\circ\text{C}$  dry heat.

## 7 Test samples and test pieces

Condition the sample roll all for 24 h at  $23^\circ\text{C} \pm 2^\circ\text{C}$  and  $50\% \pm 5\%$  relative humidity.

Use sample rolls of at least 25 mm width.



Discard the 3 outer turns of adhesive tape from each roll before taking test pieces.

Perform the test on 5 test pieces 100 mm long x 25 mm wide. For rolls wider than 25 mm, a piece 25 mm wide shall be cut longitudinally from the adhesive tape.

## 8 Procedure

### 8.1 Standard test conditions

The test shall be carried out at  $23\text{ °C} \pm 2\text{ °C}$  and  $50\% \pm 5\%$  relative humidity or at  $70\text{ °C} \pm 2\text{ °C}$  dry heat.

8.2 Take the test pieces by unrolling the adhesive tape radially at a speed of approximately 300 mm/s and then apply without delay, in the manner described below.

### 8.3 Preparation of plate

Wipe the test surface of the plate with a fresh piece of cotton wool or tissue saturated with diacetone alcohol. Dry the plate with fresh cotton wool, then wipe the test surface with a fresh piece of cotton wool saturated with one of the solvents given in clause 5.3. Dry the plate with fresh cotton wool, then repeat for a total of three cleaning operations with this solvent. Maintain the plate temperature of  $23\text{ °C} \pm 2\text{ °C}$  for at least 5 minutes before proceeding with the adhesion test procedure.

In order to obtain consistent results, a new plate, must be cleaned at least ten times before use.

### 8.4 Application of the adhesive tape to the plate

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Apply about 50 mm of the adhesive tape to one end of the plate progressively by gentle longitudinal finger stroker, in such a way that the formation of air bubbles between adhesive tape and plate is avoided, without however exerting appreciable pressure on the adhesive tape. The edges of the adhesive tape must be parallel to the long edge of the plate.

Using a suitable instrument (see Figure 2), cut the portion of the test piece adhering to the plate to a length of 25 mm, measured from the edge of the plate (see Figure 3).

To assist the following operation, apply the free portion of the adhesive tape to a second plate which has been placed in the same plane and contiguous with the short edge of the test plate. Pass the roller over the surface of the adhesive tape, to and fro, twice in each direction at a speed of approximately 10 mm/s (see Fig. 4). Then remove the second plate carefully from the adhesive tape without exerting pressure or disturbing the portion of the test piece adhered to the test plate.

Fold the free end of the adhesive tape in half on itself (i.e. adhesive to adhesive).

Leave the adhesive tape adhered to the plate for 10 minutes in the standard conditions (either  $23\text{ °C} \pm 2\text{ °C}$  and  $50\% \pm 5\%$  relative humidity or  $70\text{ °C} \pm 2\text{ °C}$  dry heat).