



SLOVENSKI STANDARD
SIST EN 1939:1997

01-avgust-1997

Samolepilni trakovi - Merjenje prilepljivosti na nerjavno jeklo ali na lastno hrbtno stran

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

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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

[SIST EN 1939:1997](#)

[https://standards.iteh.ai/catalog/standards/sist/11dab526-e828-403f-b21e-](https://standards.iteh.ai/catalog/standards/sist/11dab526-e828-403f-b21e-9dc90e3288bc/sist-en-1939-1997)

[9dc90e3288bc/sist-en-1939-1997](https://standards.iteh.ai/catalog/standards/sist/11dab526-e828-403f-b21e-9dc90e3288bc/sist-en-1939-1997)

Ta slovenski standard je istoveten z: EN 1939:1996

ICS:

83.180

Lepila

Adhesives

SIST EN 1939:1997

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST EN 1939:1997](#)

<https://standards.iteh.ai/catalog/standards/sist/11dab526-e828-403f-b21e-9dc90e3288bc/sist-en-1939-1997>

EUROPEAN STANDARD

EN 1939

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 1996

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 du pouvoir
adhésif linéaire sur acier inoxydable ou sur
son propre support

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

(standards.iteh.ai)



SIST EN 1939:1997

<https://standards.iteh.ai/catalog/standards/sist/11dab526-e828-403f-b21e-0de90e32880e/sist-en-1939-1997>

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

SIST..... EN 1939

PREVZET PO METODI RAZGLASITVE

-08- 1997

This European Standard was approved by CEN on 1996-07-19. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

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

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

Contents

FOREWORD	5
1 SCOPE	6
2 DEFINITION	6
3 PRINCIPLE	6
4 MATERIALS	6
5 APPARATUS	7
6 TEST SAMPLE AND TEST PIECES	8
7 PROCEDURE	8
7.1 Standard test conditions	8
7.2 Preparation of plate	8
7.3 Peel adhesion from stainless steel	8
7.3.1 Application of the test piece to the plate	8
7.3.2 Stripping the test piece from the test plate	9
8 EXPRESSION OF RESULTS	9
9 TEST REPORT	10
ANNEX A (NORMATIVE) SELF ADHESIVE TAPES - MEASUREMENT OF PEEL ADHESION FROM ITS OWN BACKING	11
A.1 Scope	11
A.2 Definition	11
A.3 Principle	11
A.4 Materials	11
A.5 Apparatus	11
A.6 Test sample and test pieces	12
A.7 Procedure	13
A.7.1 Standard test conditions	13
A.7.2 Preparation of plate	13
A.7.3 Peel adhesion from its own backing	13
A.8 Expression of results	14



A.9 Test report	14
ANNEX B (NORMATIVE) SELF ADHESIVE TAPES - MEASUREMENT OF PEEL ADHESION FROM STAINLESS STEEL AT LOW TEMPERATURE	15
B.1 Scope	15
B.2 Definition	15
B.3 Principle	15
B.4 Materials	15
B.5 Apparatus	15
B.6 Test sample and test pieces	16
B.7 Procedure	17
B.7.1 Standard test conditions	17
B.7.2 Preparation of plate	17
B.7.3 Peel adhesion from stainless steel at low temperature	17
B.8 Expression of results	18
B.9 Test report	18
ANNEX C (NORMATIVE) SELF ADHESIVE TAPES - MEASUREMENT OF PEEL ADHESION FROM STAINLESS STEEL OF DOUBLE SIDED ADHESIVE TAPES	19
C.1 Scope	19
C.2 Definitions	19
C.3 Principle	19
C.4 Materials	20
C.5 Apparatus	20
C.6 Test sample and test pieces	21
C.7 Procedure	21
C.7.1 Standard test conditions	21
C.7.2 Preparation of plate	21
C.7.3 Procedure for open side of double sided adhesive tape	22
C.7.4 Procedure for closed side of double sided adhesive tape	23
C.8 Expression of results	24
C.9 Test report	24
ANNEX D (NORMATIVE) SELF ADHESIVE TAPES - MEASUREMENT OF PEEL ADHESION FROM STAINLESS STEEL OF AN ADHESIVE TRANSFER TAPE	25
D.2 Normative references	25
D.3 Definitions	25

D.4 Principle	25
D.5 Materials	25
D.6 Apparatus	26
D.7 Test sample and test pieces	27
D.8 Procedure	27
D.8.1 Standard test conditions	27
D.8.2 Preparation of plate	27
D.8.3 Procedure for open side of an adhesive transfer tape	28
D.8.4 Procedure for closed side of adhesive transfer tape	29
D.9 Expression of results	30
D.10 Test report	30
ANNEX E (INFORMATIVE) BIBLIOGRAPHY	31

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 1939:1997

<https://standards.iteh.ai/catalog/standards/sist/11dab526-e828-403f-b21e-9dc90e3288bc/sist-en-1939-1997>

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"

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

iTeh STANDARD PREVIEW
(standards.iteh.ai)

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.

SIST EN 1939:1997
<https://standards.iteh.ai/catalog/standards/sist/11dab526-e828-403f-b21e-9dc90e3288bc/sist-en-1939-1997>

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 x 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 %.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

The testing surface of the plate shall first be polished to a mirror finish. It shall then be roughened with abrasive grit ²⁾. 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 must be kept in such a way to avoid any accidental scratching which may modify the surface condition.

¹⁾ Potential suppliers of tools/materials may be published by other organizations 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.

5.3 Polished cylindrical metal roller

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

6 Test sample and test pieces

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

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

Perform the test on test pieces 400 mm long and the same width as the adhesive tape. Take five or ten test pieces as required by the test.

For widths greater than 25 mm, a test piece 25 mm wide shall be cut longitudinally from the adhesive tape.

The cutting shall be carried out by means of a razor-blade or any other suitable instrument. It shall always be effected so that the adhesive surface never contacts other surfaces before application to the test plate. Cutting shall never be carried out with the adhesive tape already applied to the test plate, so as not to mark the plate for subsequent tests.

7 Procedure

7.1 Standard test conditions

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

7.2 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 4.3. Dry the plate with fresh cotton wool, then repeat for a total of three cleaning operations with this solvent. Maintain the plate at a temperature of $23\text{ °C} \pm 2\text{ °C}$ for at least five minutes before proceeding.

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

7.3 Peel adhesion from stainless steel

7.3.1 Application of the test piece to the plate

Take five test pieces by unrolling the conditioned roll radially at a speed of approximately 300 mm/s and then apply them in the manner described below, within 15 s in the standard test conditions.

Apply the test piece progressively by gentle longitudinal finger strokes 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 test piece shall be centred on the plate such that the edge of the test piece is parallel to the long edge of the 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. Leave the adhesive tape adhered to the plate for 10 min in the standard test conditions and then test as described below.

7.3.2 Stripping the test piece from the test plate

Peel off about 25 mm of the adhesive tape from the starting end of the plate, the line of separation being perpendicular to the axis of the test piece.

Fix the starting end of the plate in one clamp of the tensile testing machine.

Fold back the free end of the adhesive tape and fix it in the other clamp so that the non-adhesive surfaces are almost in contact and exactly aligned. Ensure that the two surfaces remain perfectly superimposed without rubbing.

At least 25 mm of the adhesive tape shall remain to be peeled before the first reference mark is reached.

If a pendulum machine is used, ensure that the pendulum swings freely. Set the speed at 300 mm/min \pm 30 mm/min and start the tensile testing machine.

Take readings as the line of separation of adhesive tape from the plate passes each reference mark.

NOTE : In spite of its apparent simplicity, the use of this method is rather delicate and involves the observation of a certain number of precautions to give coherent and identical results between one laboratory and another as well as between one operator and another. Attention is drawn to the following points :

- the temperature at which the measurement is carried out is very important. The standard conditions of 23 °C \pm 2 °C allow the test to take place between 21 °C and 25 °C. It has been found that the peel adhesions at 21 °C and 25 °C are different ³⁾ ;
- the tester should know that, by prolonged handling, heat is transmitted to the stainless steel plate. Therefore, during and after application of the adhesive tape to the plate, both should be handled as little as possible.
- care should be taken to roll horizontally over the adhesive tape which is in contact with the stainless steel plate, in order to exert a completely uniform pressure over the length and the width of the adhesive tape.
- it should be noted that the adhesive tape should be applied within 15 seconds following its removal from the roll.

8 Expression of results

For each test piece, arrange the five readings in ascending order and take the median value. Similarly, arrange these five median values in ascending order and take their median.

Take as the peel adhesion the value (median) so obtained and express in newtons per centimetre width of adhesive tape tested.

After each test, examine the test plate visually and note the appearance of the adhesive and, in particular, any deposit or transfer onto the plate.

Since the measurements made using different types of tensile testing machines (for example, electronic or pendulum) are not directly comparable, the type of tensile testing machine used shall be indicated in the report.

³⁾ More accurate results may be obtained if the temperature is restricted to 23 °C \pm 1 °C.

9 Test report

The test report shall include the following information :

- a) a reference to this European Standard ;
- b) all information necessary to identify the test sample ;
- c) the type of tensile testing machine used ;
- d) the date of the test ;
- e) the results obtained ;
- f) any operation not specified in this European Standard, which may influence the results.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 1939:1997

<https://standards.iteh.ai/catalog/standards/sist/11dab526-e828-403f-b21e-9dc90e3288bc/sist-en-1939-1997>