SLOVENSKI STANDARD
oSIST prEN ISO 29864:2019

01-februar-2019

Samolepilni trakovi - Merjenje utržne trdnosti in raztezka ob utrgu (ISO 29864:2018)

Self adhesive tapes - Measurement of breaking strength and elongation at break (ISO 29864:2018)

Klebebänder - Messung der Bruchkraft und der Reißdehnung (ISO 29864:2018)

Rubans auto-adhésifs - Mesure de la résistance à la rupture et de l'allongement à la rupture (ISO 29864:2018)

Ta slovenski standard je istoveten z: **prEN ISO 29864**

ICS:

83.180	Lepila	Adhesives

oSIST prEN ISO 29864:2019 **en,fr,de**

INTERNATIONAL STANDARD

ISO 29864

Second edition
2018-05

Self adhesive tapes — Measurement of breaking strength and elongation at break

Rubans auto-adhésifs — Mesure de la résistance à la rupture et de l'allongement à la rupture

Reference number
ISO 29864:2018(E)

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 11, *Products*.

This second edition cancels and replaces the first edition (ISO 29864:2007) of which it constitutes a minor revision.

The changes compared to the previous edition are as follows:

— the Introduction has been editorially revised;

— the normative references in Clause 2 have been updated;

— a definition has been added for “self adhesive tape” in Clause 3;

— the text has been editorially revised to comply with the most recent editing rules.

Introduction

The breaking strength of adhesive tape is of value as an indication of its uniformity and quality, and its ability to withstand stresses during application and use.

The elongation at break of the adhesive tape is of value as an indication of its uniformity and quality as well as a rough indication of its ability to conform to curved and irregular surfaces. It is usually determined at the same time as the breaking strength.

The procedure specified in this document combines the determination of breaking strength and elongation at break.

Method A is the measurement of breaking strength and elongation at break of tapes other than filament tapes.

Method B is the measurement of breaking strength and elongation at break of filament reinforced tapes.

Self adhesive tapes — Measurement of breaking strength and elongation at break

1 Scope

This document specifies methods to measure the breaking strength and elongation at break of a self adhesive tape when it is subjected to a tensile force sufficient to cause it to break.

These test methods describe a procedure for testing 12 mm or 24 mm wide samples cut from supplied rolls of self adhesive tapes. Alternatively rolls of self adhesive tape up to 50 mm wide can be directly tested in their original width. In these circumstances the practical breaking strength and elongation will be typical of the manufacturer's cut edges. When newly cut sample pieces are tested, because of the better cutting of the edges, the results can be higher than would be found on commercial tape.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12481, *Self adhesive tapes — Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12481 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
breaking strength
ability to resist breaking when subject to load under prescribed conditions

3.2
elongation at break
increase in length of the adhesive tape at the time of breaking as a percentage of the original length

3.3
self adhesive tape
pressure sensitive adhesive
adhesive which in a dry state is permanently tacky at room temperature and adheres readily to surfaces under brief and light pressure

4 Significance and use

These methods provide a means of assessing the uniformity of breaking strength and elongation at break of a given type of pressure sensitive tape and may be used to compare one product with another.

They may be used to determine particular backing materials or tape widths appropriate to a desired end use.

When relative strength is of interest, the testing should be on tape in the width received to avoid discrepancies as described above.

NOTE 1 Comparison of tapes by different procedures should be avoided because test parameters such as test piece dimension or jaw speed determine the result. Different levels will produce different results for the same test tape. It is usual to find breaking strength increasing significantly with increasing jaw speed.

NOTE 2 Elongation measurements become difficult to perform on stretchy materials (greater than 200 % elongation at break) when the ratio of test piece length to width is small (approaching 2). The results show high variability and do not allow for practical use of this information except when one wishes to demonstrate large differences between materials.

5 Principle

The method consists of holding the adhesive tape vertically by the two clamps of a tensile testing machine. A tensile test is carried out until the adhesive tape breaks.

Method A: A strip of tape is mounted between two clamps aligned in a straight flat plane and a force is applied at a specified rate until the tape breaks.

Method B: A strip of filament reinforced tape is applied to two drums aligned in a flat plane and a force is applied at a specified rate until the tape breaks.

6 Apparatus

6.1 Tensile testing machine

A constant rate of extension (CRE) tension tester shall be used. The tester shall have two clamps with centres in the same plane, parallel with the direction of the motion on the stressing clamp and so aligned that they will hold the specimen wholly in the same plane, a means of moving the stressing clamp at a uniform rate of 5 mm/s ± 0,2 mm/s and a device for recording load and clamp displacement. The instrument shall be calibrated such that a maximum error of 2 % is allowed on the reading.

6.2 Clamps

Preferably of the pneumatic action type. Clamp faces should be at least 50 mm wide and 38 mm deep. The faces should have a light cross-hatched serration to minimise the risk of slippage.

NOTE Plastic materials are reduced in width and thickness as they stretch. This causes them to draw down out of the clamps. Pneumatic clamps minimize this effect. It can be further reduced by the appropriate choice of surface on the clamps. The greatest improvement, both with respect to the above mentioned shrinkage problem and simple slippage, may be found from the use of urethane film which can be obtained as a self adhesive tape approximately 0,5 mm thick. This material has a very high coefficient of friction, is somewhat malleable and is easily replaced. Alternative materials are coated abrasives, rubber (or other synthetic types) or other tapes.

The use of clamps for testing reinforced tapes is discouraged because the strength of reinforced tapes requires excessive clamping pressure which can cause crushing of the reinforcing filaments. When this occurs, the tape usually breaks at the jaw edge which can result in lower breaking values. Hence the use of cylinders described in method B and in 6.3 is recommended for reinforced tapes.

6.3 Cylinders

Used in place of clamps in method B for reinforced tapes. Each of the two cylinders shall be approximately 100 mm in diameter and approximately 38 mm wide held in the position ordinarily occupied by the clamps so that the tape, when applied to the cylinders and extended between them falls in the line of stress otherwise occupied by the test piece when clamps are used. See Figure 1.

