Metallic and other inorganic coatings - Method for quantitative measurement of adhesion by tensile test

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13144:2018 sisaldab Euroopa standardi EN 13144:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 13144:2018 consists of the English text of the European standard EN 13144:2018.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 28.11.2018.	Date of Availability of the European standard is 28.11.2018.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 25.220.40, 25.220.99

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 13144

November 2018

ICS 25.220.40; 25.220.99

Supersedes EN 13144:2003

English Version

Metallic and other inorganic coatings - Method for quantitative measurement of adhesion by tensile test

Revêtements métalliques et autres revêtements inorganiques - Méthode de mesurage quantitatif de l'adhérence par essai de traction

Metallische und andere anorganische Überzüge - Verfahren zur quantitativen Messung der Haftfestigkeit durch den Zugversuch

This European Standard was approved by CEN on 28 September 2018.

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 CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN 13144:2018 E

Contents

Page

European foreword

This document (EN 13144:2018) has been prepared by Technical Committee CEN/TC 262 “Metallic and other inorganic coatings, including for corrosion protection and corrosion testing of metals and alloys”, the secretariat of which is held by BSI.

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 May 2019 and conflicting national standards shall be withdrawn at the latest by May 2019.

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

This document supersedes EN 13144:2003.

In comparison with EN 13144:2003, the following modifications have been made:

— the Scope has been rewritten to give more information;

— normative references have been added;

— the terms and definitions have been updated;

— in addition to the tensile testing machine previously described, the centrifuge has been added as a further type of testing machine;

— sample description has been expanded to describe test stamps, planar samples and coated samples;

— consideration of adhesives and their application has been expanded;

— the measurement section has been revised;

— the expression of results clause has been revised and failure pattern according to EN ISO 10365:1995 added;

— the test report clause has been revised.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies a quantitative method for the measurement of adhesive strength of metallic and other inorganic coatings applied to metallic, polymer and glass substrates.

Typical coatings for which this document applies are metallic coatings such as aluminium, copper, nickel, nickel plus chromium, silver, tin, tin-nickel alloys, zinc, gold as well as other inorganic coatings such as oxides or nitrides, e.g. of aluminium, indium and indium-tin, silicon, niobium, titanium, tungsten, zirconium and others.

This document does not apply to certain hot dip, spray and mechanical coatings, for which other standards may apply, e.g. EN ISO 14916 or EN ISO 4624.

The measurement is valid if the cohesion and adhesion properties of the adhesive are higher than those of the coating subjected to test.

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 15870, *Adhesives - Determination of tensile strength of butt joints (ISO 6922:1987 modified)*

EN ISO 4624, *Paints and varnishes - Pull-off test for adhesion (ISO 4624)*

EN ISO 10365:1995, *Adhesives - Designation of main failure patterns (ISO 10365:1992)*

3 Terms and definitions

For the purposes of this document, the following terms and definitions 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 http://www.iso.org/obp

3.1
adhesive strength
force per unit area required to separate a coating from its substrate

Note 1 to entry: Adhesion can be deemed inadequate in the presence of blisters, scaling and any defect that results from the separation of the coating from its substrate.

3.2
adhesion
physical property resulting from the magnitude of forces joining the atoms and/or molecules at an interface of two materials

3.3
cohesion
physical property resulting from the magnitude of forces joining the atoms and/or molecules within one material

3.4
test block
metallic cylinder used for pull-off tests within the tensile testing machine (described in 4.2.1.2)