SLOVENSKI STANDARD
SIST EN 12373-14:2002

01-februar-2002

Aluminij in aluminijeve zlitine - Anodizacija - 14. del: Vizualno določanje ostrine slike v anodizirani plasti - Metoda tabelarij ne lestvice

Aluminium and aluminium alloys - Anodizing - Part 14: Visual determination of image clarity of anodic oxidation coatings - Chart scale method

Aluminium und Aluminiumlegierungen - Anodisieren - Teil 14: Visuelle Bestimmung der Abbildungsschärfe von anodisch erzeugten Oxidschichten - Meßgittermethode

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Aluminium et alliages d'aluminium - Anodisation - Partie 14: Détermination de la netteté d'image sur couches anodiques -Méthode des échelles graduées

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Ta slovenski standard je istoveten z: **EN 12373-14:2000**

ICS:

25.220.20	Površinska obdelava	Surface treatment
77.120.10	Aluminij in aluminijeve zlitine	Aluminium and aluminium alloys

SIST EN 12373-14:2002 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 12373-14

August 2000

ICS 25.220.20; 77.120.10

English version

Aluminium and aluminium alloys - Anodizing - Part 14: Visual determination of image clarity of anodic oxidation coatings - Chart scale method

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This European Standard was approved by CEN on 27 July 2000.

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

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Ref. No. EN 12373-14:2000 E

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Foreword

This European Standard has been prepared by Technical Committee CEN/TC 132 "Aluminium and aluminium alloys", 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of an identical text or by endorsement, at the latest by February 2001, and conflicting national standards shall be withdrawn at the latest by February 2001.

It is based upon ISO 10215:1992.

EN 12373, Aluminium and aluminium alloys — Anodizing, comprises the following parts:

Part 1:	Method for specifying decorative and protective anodic oxidation coatings on aluminium
Part 2:	Determination of mass per unit area (surface density) of anodic oxidation coatings – Gravimetric method
Part 3:	Determination of thickness of anodic oxidation coatings – Non-destructive measurement by split beam microscope
Part 4:	Estimation of loss of absorptive power of anodic oxidation coatings after sealing by dye spot test with prior acid treatment
Part 5:	Assessment of quality of sealed anodic oxidation coatings by measurement of admittance
Part 6:	Assessment of quality of sealed anodic oxidation coatings by measurement of the loss of mass after immersion in phosphoric acid/chromic acid solution without prior acid treatment
Part 7:	Assessment of quality of sealed anodic oxidation coatings by measurement of the loss of mass after immersion in phosphoric acid/chromic acid solution with prior acid treatment
Part 8:	Determination of the comparative fastness to ultra-violet light and heat of coloured anodic oxidation coatings
Part 9:	Measurement of wear resistance and wear index of anodic oxidation coatings using an abrasive wheel wear test apparatus
Part 10:	Measurement of mean specific abrasion resistance of anodic oxidation coatings using an abrasive jet test apparatus
Part 11:	Measurement of specular reflectance and specular gloss of anodic oxidation coatings at angles of 20°, 45°, 60° or 85°
Part 12:	Measurement of reflectance characteristics of aluminium surfaces using integrating-sphere instruments
Part 13:	Measurement of reflectivity characteristics of aluminium surfaces using a goniophotometer or an abridged goniophotometer
Part 14:	Visual determination of image clarity of anodic oxidation coatings – Chart scale method

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Part 15: Assessment of resistance of anodic oxidation coatings to cracking by deformation
Part 16: Check for continuity of thin anodic oxidation coatings – Copper sulfate test
Part 17: Determination of electric breakdown potential
Part 18: Rating system for the evaluation of pitting corrosion – Chart method
Part 19: Rating system for the evaluation of pitting corrosion – Grid method

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

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1 Scope

This part of this European Standard specifies a visual method for determining the image clarity of anodic oxidation coatings on aluminium and aluminium alloys using a chart scale and a lightness scale, which are defined. The method can be applied only to flat surfaces which can reflect the image of the chart scale pattern.

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 updated references the latest edition of the publication referred to applies (including amendments).

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ISO/TR 8125:1984, Anodizing of aluminium and its alloys - Determination of colour and colour difference of coloured anodic coatings.

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3 Terms, definitions and symbols

For the purposes of this standard, the following tems, definitions and symbols apply.

3.1
image clarity
C_v
ability of the surface of an anodic oxidation coating to produce a clear image of an object reflected in the surface

NOTE In the method described in this standard, image clarity is represented by a symbol C_v and expressed as a numerical unit which is calculated by taking into account the image clearness, the image distortion and the haze value (see clause 8).

3.2
image clearness
C
limit of visual resolution of fine details of a chart scale when reflected by a surface, given by the grade number on the chart scale

NOTE Image clearness relies heavily on the roughness of the surface being measured, and the lower the roughness the clearer or sharper the image becomes, i.e. the nearer the surface becomes to a perfect mirror, the clearer the image becomes.

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3.3
image distortion
I
degree of distortion of an image caused by the waviness of a surface, given by the grade number on the chart scale

NOTE Image distortion depends on the evenness of the surface being measured. The distortion occurs because part of the incident light is reflected in a direction different from that of the bulk of the light due to an uneven surface. Even if a surface is mirror-finished, it will present a distorted image if waviness is present.

3.4
haze value
H_n
degree of opacity of the coating on a surface, expressed as lightness units

NOTE Haze represents the opacity or transparency of the coating layer. Poor transparency causes absorption and scattering of normally reflected light, thus reducing the clarity of the image.

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4 Principle

The image clarity of an anodic oxidation coating is determined by visual estimation of three properties of the coating layer: image clearness, image distortion and haze . These properties are determined by evaluating the image of a chart scale on the test pieces.

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5 Apparatus

5.1 Chart scale, as shown in Figure 1, comprising a translucent plastic film or glass on which a pattern of optical combs is arranged using black and white lines with a range of specified widths (grades 1 to 11). The light transmittance of the dark lines should be virtually zero.

The widths of the black lines, and the spaces between two adjoining black lines, for each grade are the same and the lines are perfectly parallel. The lines for grade 1 are the widest and those for grade 11 are the narrowest. The widths of the lines for each grade are given in Table 1.

NOTE The widths of lines for grades 1 to 7 form an arithmetical progression. The grades above grade 7 are used for estimating comparatively high image clarity and grades 7, 9 and 11 form a geometrical progression, grade 8 is the median of 7 and 9, and grade 10 is the median of 9 and 11.

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Figure 1 — Chart scale

Table 1 — Width of lines for each grade of the chart scale

Grade	1	2	3	4	5	6	7	8	9	10	11
Width (mm)	2,0	1,75	1,5	1,25	1,0	0,75	0,5	0,375	0,25	0,188	0,125

5.2 Observation box, as shown in Figures 2 and 3, which accommodates the chart scales used. It has a window in which the scale (grades 1 to 11) may be set, and an observation window on the other side. The window for the test pieces is at the base of the box.

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Dimensions in millimetres, unless otherwise indicated

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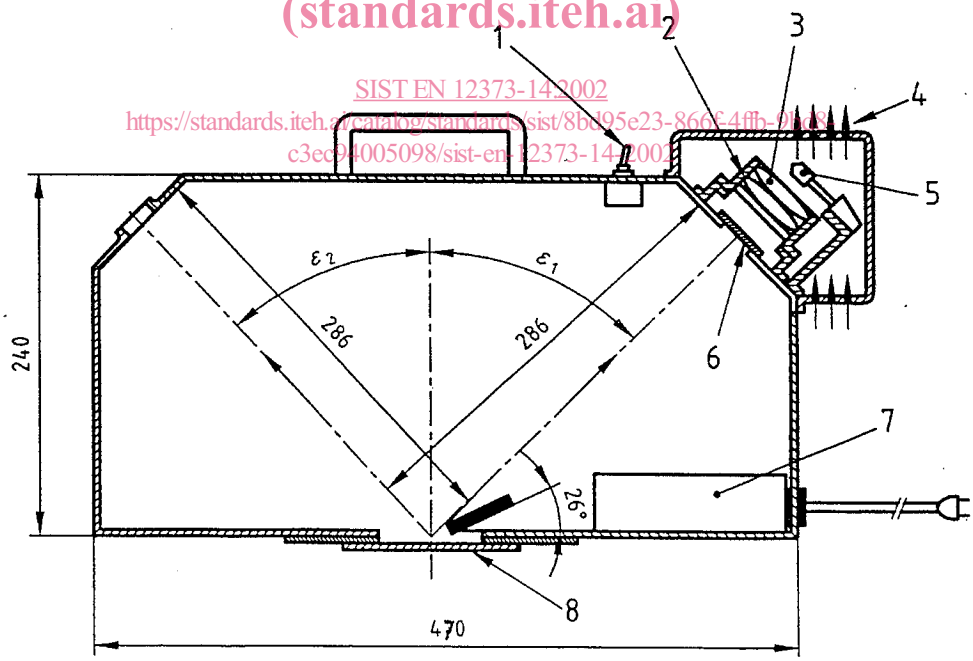

Key

1 Power switch
2 Diffuser
3 Lens (focal length 50 mm)
4 Air vent
5 Source of white light
6 Chart scale
7 Power source
8 Test piece

Figure 2 — Diagram of a typical observation box