SLOVENSKI STANDARD
oSIST prEN ISO 8993:2018

01-januar-2018

Anodizacija aluminija in aluminijevih zlitin - Ocenjevalni sistem za vrednotenje jamičaste korozije - Tabelarična metoda (ISO/DIS 8993:2017)

Anodizing of aluminium and its alloys - Rating system for the evaluation of pitting corrosion - Chart method (ISO/DIS 8993:2017)

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Anodisieren von Aluminium und Aluminiumlegierungen - Bewertungssystem für Lochkorrosion - Richtreihenmethode (ISO/DIS 8993:2017)

Anodisation de l'aluminium et de ses alliages - Système de cotation de la corrosion par piqûres - Méthode reposant sur des images-types (ISO/DIS 8993:2017)

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Ta slovenski standard je istoveten z: prEN ISO 8993

ICS:

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

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DRAFT INTERNATIONAL STANDARD

ISO/DIS 8993

ISO/TC **79**/SC **2**

Secretariat: **JISC**

Voting begins on:
2017-10-27

Voting terminates on:
2018-01-19

Anodizing of aluminium and its alloys — Rating system for the evaluation of pitting corrosion — Chart method

Anodisation de l'aluminium et de ses alliages — Système de cotation de la corrosion par piqûres — Méthode reposant sur des images-types

ICS: 25.220.20; 77.060

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ISO/CEN PARALLEL PROCESSING

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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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For an explanation on 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.

The committee responsible for this document is Technical Committee ISO/TC 79, *Light metals and their alloys, Subcommittee SC 2, Organic and anodic oxidation coatings on aluminium.*

This third edition cancels and replaces the second edition (ISO 8993:2010), which has been technically revised.

The main changes compared to the previous edition are as follows:

— Rating number (RN) was added to Table 1 and Figure 1-8;

— Rating charts for designation A (RN 10) was added to Figure 1.

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Anodizing of aluminium and its alloys — Rating system for the evaluation of pitting corrosion — Chart method

1 Scope

This document specifies a chart rating system based on standard charts that provides a means of defining levels of performance of anodic oxidation coatings on aluminium and its alloys that have been subjected to corrosion tests.

This rating system is applicable to pitting corrosion resulting from

— accelerated tests,

— exposure to corrosive environments, and

— practical service tests.

This document takes into account only pitting corrosion resulting from penetration of the protective anodic oxidation coating.

NOTE ISO 8994[1] describes a similar rating system based on defined grids.

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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.

ISO 7583, *Anodizing of aluminium and its alloys — Terms and definitions*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7583 and the following apply.

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

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

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

corrosion pit

surface corrosion defect at which the anodic oxidation coating is penetrated

NOTE Discoloration or other surface defects which do not penetrate the anodic coating do not count as corrosion pits.

4 Procedure for rating

4.1 Preparation of test specimen

A flat test specimen area of at least 5 000 mm^2 is necessary.

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Use one of the following methods to remove corrosion products or deposits on the surface so that corrosion pits can be easily discerned:

a) wipe with a slurry of fine pumice to abrade away corrosion products and dirt, then rinse in clean water and air dry;

or

b) dip for 5 min to 10 min in 30 % nitric acid, prepared by diluting 1 volume of concentrated nitric acid (ρ_{20} = 1,40 g/ml) with 1 volume of water at 20 °C to 25 °C; rinse and dry as indicated in a);

or

c) dissolve the anodic oxidation coating in a hot phosphoric acid/chromic acid mixture; rinse and dry as indicated in a) so that pitting in the aluminium substrate may be discerned;

NOTE 1 ISO 2106[2] describes the preparation and use of this reagent for the purposes of dissolution of the anodic oxidation coating.

NOTE 2 This method is particularly useful for dark-coloured anodic oxidation coatings.

WARNING — Chromium (VI) is toxic and shall be handled properly. Chromium (VI) solutions are hazardous to the environment and severely hazardous to waters.

or

d) wipe with soft textile gauze dipped in dilute hydrochloric acid solution (100 ml of 35 % to 37 % HCl, made up to 1 000 ml with distilled water or deionized water) to remove deposited copper, then rinse and dry as indicated in a).

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4.2 Determination of chart rating

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Select an area of at least 5 000 mm^2 on the significant surface of the test specimen.

NOTE A mask with an opening of 50 mm × 100 mm can be used to define the area to be evaluated.

Compare the size and frequency of corrosion pits on the cleaned significant surface with the rating charts given in Figures 1 to 8. The rating charts show the maximum limit of corroded area for rating designation. The rating chart will be the chart designation which most closely resembles the corroded specimen. Disregard effects on the edges of test specimens. A rating of A indicates no visible corrosion, and a rating of H indicates the greatest degree of corrosion covered by this document.

A conversion of the chart rating and/or the rating number (RN) to percentage area of the significant surface covered by corrosion pits is indicated in Table 1.

Table 1 — Conversion of chart rating and rating number (RN) to percentage area covered by corrosion pits

Chart rating	Rating number(RN)	Percentage area of corrosion pits %
A	10	0,00 (None)
B1 B2 B3 B4 B5 B6	9.8	> 0,00 and ≤0,02
C1 C2 C3 C4 C5 C6	9.5	> 0,02 and ≤ 0,05
D1 D2 D3 D4 D5 D6	9.3	> 0,05 and ≤ 0,07
E1 E2 E3 E4 E5 E6	9	> 0,07 and ≤ 0,10
F1 F2 F3 F4 F5 F6	8	> 0,10 and ≤ 0,25
G1 G2 G3 G4 G5 G6	7	> 0,25 and ≤ 0,5
H1 H2 H3 H4 H5 H6	6	> 0,5

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5 Expression of results

Express the result of the examination as the chart rating and/or rating number (RN) and/or the percentage area covered by corrosion pits, as appropriate.

NOTE The number to show next the alphabet from B to H in Figure 2-8 indicates the grade of the corrosion pits size on the same rating number.

6 Test report

The test report shall include at least the following information:

a) a reference to this document (i.e. ISO 8993:2017);

b) the type and identification of the product tested and, where appropriate, the anodizing, exposure and corrosion test procedure;

c) the preparation method of test specimen (see 4.1);

d) the comparison method used, for example, whether the comparison was done visually or electronically; in the case of comparison by an electronic method, the specification of the test apparatus shall also be given;

e) the chart rating and/or rating number (RN) and/or the percentage area covered by corrosion pits (see 4.2);

NOTE The acceptable chart rating and/or rating number (RN) will normally be specified in the relevant corrosion test or product specification.

f) any unusual features observed;

g) the date of the test.

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A

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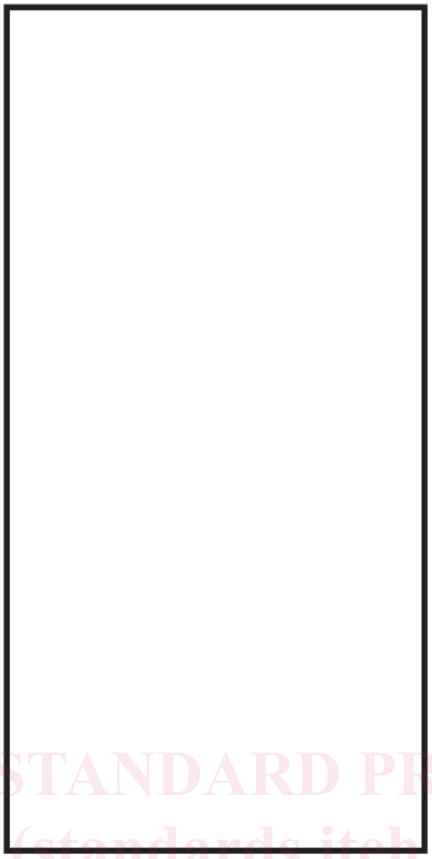

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Figure 1 — Rating chart for designation A (RN 10)

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(Area of defects 0,00%)(no corrosion pits)

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