SLOVENSKI STANDARD
SIST EN 2715:2019

01-marec-2019

Aeronavtika - Makrografski pregled izdelkov iz aluminija in aluminijevih zlitin, kovnih materialov in izkovkov

Aerospace series - Macrographic examination of aluminium and aluminium alloy wrought products, forging stock and forgings

Luft- und Raumfahrt - Makrographische Untersuchung von Kneterzeugnissen aus Aluminium und Aluminiumlegierungen Schmiedevormaterial und Schmiedestücke

Série aérospatiale - Examen macrographique des produits corroyés, des produits destinés à la forge et des pièces forgées ou matricées en aluminium ou en alliages d'aluminium

Ta slovenski standard je istoveten z: **EN 2715:2018**

ICS:

49.025.20	Aluminij	Aluminium

SIST EN 2715:2019 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 2715

December 2018

ICS 49.025.20

English Version

Aerospace series - Macrographic examination of aluminium and aluminium alloy wrought products, forging stock and forgings

Série aérospatiale - Examen macrographique des produits corroyés, des produits destinés à la forge et des pièces forgées ou matricées en aluminium ou en alliages d'aluminium

Luft- und Raumfahrt - Makrographische Untersuchung von Kneterzeugnissen aus Aluminium und Aluminiumlegierungen Schmiedevormaterial und Schmiedestücke

This European Standard was approved by CEN on 24 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 2715:2018 E

Contents

Page

European foreword

This document (EN 2715:2018) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-STAN).

After enquiries and votes carried out in accordance with the rules of this Association, this Standard has received the approval of the National Associations and the Official Services of the member countries of ASD, prior to its presentation to CEN.

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 June 2019, and conflicting national standards shall be withdrawn at the latest by June 2019.

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

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 European Standard specifies the procedure for the macrographic examination of the cut surface from aluminium and aluminium alloy wrought products, forging stock and forgings.

It does not consider health and safety requirements. It is the responsibility of the user to adopt appropriate health and safety precautions when hazardous substances are involved.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

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

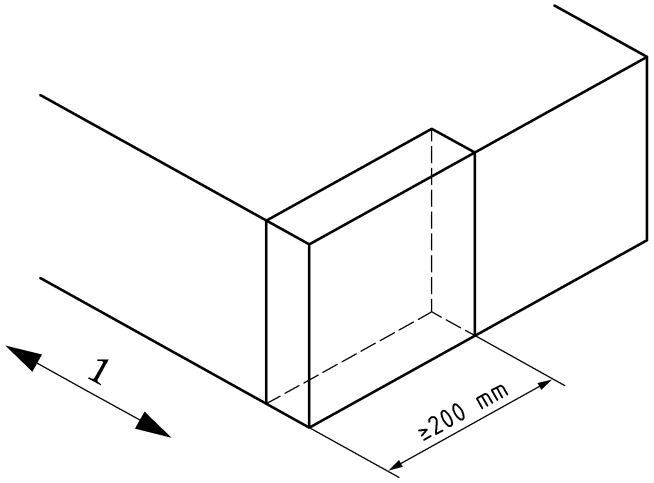
4 Selection of test samples

4.1 All products except plate

Samples shall be taken as required by the relevant technical specification, material standard, drawing, order or inspection schedule.

4.2 Plate

Samples at least 200 mm long and from full thickness of the plate shall be taken normal to the rolling direction, as shown in Figure 1.



Key

1 Rolling direction

Figure 1

5 Preparation of test samples

5.1 Test samples from wrought products in heat treatable alloys which are not solution treated, shall be solution treated or solution treated and artificially aged in accordance with the material standard prior to being prepared for examination. Artificial ageing may be omitted if this facilitates macrographic examination.

5.2 When required, the surface to be examined shall be suitably prepared by machining and/or polishing, prior to etching. The preparation shall not modify the macrographic structure or cause overheating.

5.3 The test sample shall be etched in a suitable reagent at ambient temperature to reveal the macrographic structure.

The following reagents (solutions) are recommended but alternative solutions may be used by agreement between manufacturer and purchaser.

For non heat treatable alloys and AL-P6XXX- series alloy, see Table 1:

Table 1 — Recommended reagent for non-heat treatable alloys and AL-P6XXX alloys

Reagents	% vol.
Nitric acid 70 % concentrated	30
Hydrochloric acid 35 % concentrated	30
Hydrofluoric acid 40 % concentrated	3
Demineralised or deionised water	37

For AL-P2XXX- series, AL-P7XXX- series, and aluminium-lithium alloys, see Table 2:

Table 2 — Recommended reagent for AL-P2XXX-, AL-P7XXX-, and aluminium-lithium alloys

Reagents	% vol.
Sulphuric acid 99 % concentrated	15
Hydrofluoric acid 40 % concentrated	10
Demineralised or deionised water	75

After etching, rinse in water, desmutt in nitric acid 70 % concentrated, rinse and dry.

6 Examination

The test samples prepared in accordance with Clause 5 shall be examined with the naked eye or at a magnification ≤ 6 (six) times.

7 Acceptance criteria

The results of the examination shall meet the requirements of the relevant technical specification, material standard, drawing, order or inspection schedule.