



# SLOVENSKI STANDARD

## SIST EN 683-2:1998

01-april-1998

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### Aluminij in aluminijeve zlitine - Hladno valjani polizdelki za toplotne izmenjevalnike - 2. del: Mehanske lastnosti

Aluminium and aluminium alloys - Finstock - Part 2: Mechanical properties

Aluminium und Aluminiumlegierungen - Vormaterial für Wärmeaustauscher (Finstock) -  
Teil 2: Mechanische Eigenschaften

Aluminium et alliages d'aluminium - Bandes pour échangeurs thermiques - Partie 2:  
Caractéristiques mécaniques

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Ta slovenski standard je istoveten z: EN 683-2:1996

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#### ICS:

77.150.10      Aluminijski izdelki                      Aluminium products

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EUROPEAN STANDARD

EN 683-2

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 1996

ICS 77.120.10

Descriptors: aluminium, aluminium alloys, rolled products, thin films, heat exchangers, mechanical characteristics, tension tests, tables (data)

English version

## Aluminium and aluminium alloys - Finstock - Part 2: Mechanical properties

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# CEN

European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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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of an identical text or by endorsement, at the latest by February 1997, and conflicting national standards shall be withdrawn at the latest by February 1997.

This standard is part of a set of a set of three standards which are the following:

- |          |   |
|----------|---|
| EN 683-1 | Aluminium and aluminium alloys - Finstock - Part 1 : Technical conditions for inspection and delivery |
| EN 683-2 | Aluminium and aluminium alloys - Finstock - Part 2 : Mechanical properties                            |
| EN 683-3 | Aluminium and aluminium alloys - Finstock - Tolerances on dimensions and form                         |

According to CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, 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 EN 683 specifies the mechanical properties of wrought aluminium and aluminium alloy finstock.

It applies to flat rolled products.

The chemical composition limits of these materials are specified in EN 573-3.

The designations of wrought aluminium and aluminium alloys and the temper designations used in this standard are specified in EN 573-1 and EN 573-2 and EN 515 respectively.

## 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 undated references the latest edition of the publication referred to applies.

EN 515	Aluminium and aluminium alloys - Wrought products - Temper designations
EN 573-1	Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 1 : Numerical designation system
EN 573-2	Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 2 : Chemical symbol based designation system
EN 573-3	Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 3 : Chemical composition
EN 683-1:1996	Aluminium and aluminium alloys - Finstock - Part 1 : Technical conditions for inspection and delivery
EN 10002-1	Metallic materials - Tensile testing - Part 1 : Method of test (at ambient temperature)

## 3 Tensile testing

The selection and number of specimens and test pieces shall be as specified in 6.1.2 and 6.1.3 of EN 683-1:1996.

Tensile testing shall be carried out according to EN 10002-1 noting the following :

- applies to gauges between 80  $\mu\text{m}$  and 350  $\mu\text{m}$  ;
- test pieces shall be either parallel-sided (see figure 1) or with shoulders and a reduced parallel section.

Parallel sided test pieces shall be prepared using a double bladed cutter or guillotine (see figure 2) or a precision ground sample shear of "punch and die" construction.

Shouldered test pieces shall have a similar sample shear or can be machined in packs using a milling-type cutter.

Parallel sided test pieces shall have a width of  $15 \text{ mm} \pm 0,1 \text{ mm}$  and a gauge length of  $50 \text{ mm} \pm 1 \text{ mm}$  or  $100 \text{ mm} \pm 1 \text{ mm}$ .

Shouldered test pieces shall be in accordance with EN 10002-1.

During the part of the test to determine proof stress, the strain rate shall not exceed 10 MPa/s. The strain rate can then be increased until rupture but it shall not exceed 50 % of the gauge length per minute.

Considering the difficulty in marking thin gauge material, the gauge length may be measured by the distance between the grips of the testing machine. The elongation is then determined from the difference in the distance between the grips before testing and at fracture, or by direct reading from the load vs-crosshead displacement diagram when available. This provision only applies to parallel-sided test pieces.



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$L_0$  gauge length =  $(50 \pm 1) \text{ mm}$  or  $(100 \pm 1) \text{ mm}$

$W$  width =  $(15 \pm 0,1) \text{ mm}$

$T$  thickness of strip

$B$  length of grip section = minimum value 25 mm

Figure 1 : Parallel sided test piece

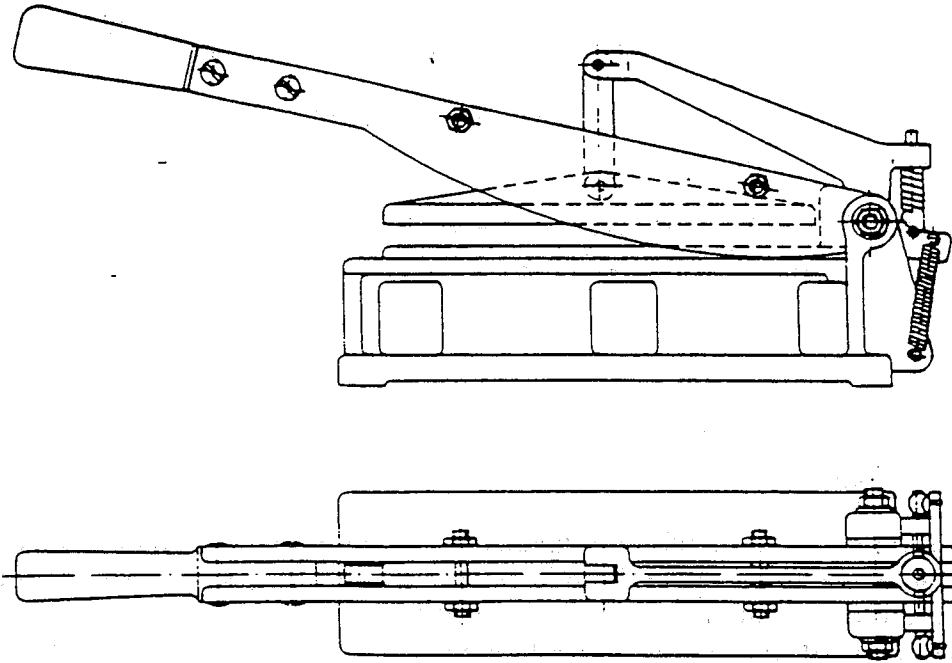


Figure 2 : Example of double-bladed cutter

#### 4 Mechanical properties

Mechanical property values for aluminium and aluminium alloys in finstock form are specified in table 1. For the elongation measurement, two different gauge lengths may be used. The choice of the gauge length used, either 50 mm or 100 mm shall be at the discretion of the supplier unless otherwise agreed; nevertheless, the supplier shall inform the purchaser of the length used.

#### 5 Rounding of test results

Test results shall be rounded in accordance with the rounding rules given in the annex A.



Table 1 : Mechanical properties for finstock

Material	Gauge range $\mu\text{m}$	Temper													
		O				H22				H24					
		Tensile strength $R_{p0,2}$	Tensile strength $R_m$	Elongation $A_{50\text{mm}}$ or $A_{100\text{mm}}$	Tensile strength $R_{p0,2}$	Tensile strength $R_m$	Elongation $A_{50\text{mm}}$ or $A_{100\text{mm}}$	Tensile strength $R_{p0,2}$	Tensile strength $R_m$	Elongation $A_{50\text{mm}}$ or $A_{100\text{mm}}$	Tensile strength $R_{p0,2}$	Tensile strength $R_m$	Elongation $A_{50\text{mm}}$ or $A_{100\text{mm}}$		
EN AW-1050A [Al 99,5]	80 to 139 140 to 200	max. 55	min. 50	max. 95	min. 55	min. 6	min. 55	max. 125	min. 85	min. 6	min. 55	min. 75	max. 145	min. 105	min. 4
EN AW-1100 [Al 99,0Cu]	80 to 139 140 to 200	max. 60	min. 60	max. 105	min. 65	min. 10	min. 65	max. 135	min. 90	min. 6	min. 65	min. 95	max. 160	min. 110	min. 4
EN AW-1200 [Al 99,0]	80 to 139 140 to 200	max. 60	min. 60	max. 105	min. 65	min. 14	min. 65	max. 135	min. 90	min. 7	min. 65	min. 95	max. 160	min. 110	min. 5
EN AW-3003 [Al Mn1Cu]	80 to 139	max. 80	min. 80	max. 130	min. 80	min. 12	min. 80	max. 160	min. 120	min. 11	min. 80	min. 105	max. 180	min. 140	min. 8
EN AW-3103 [Al Mn1]	140 to 200	max. 80	min. 80	max. 130	min. 80	min. 15	min. 80	max. 160	min. 120	min. 14	min. 80	min. 105	max. 180	min. 140	min. 9
EN AW-5005 [Al Mg1(B)]	80 to 139 140 to 200	max. 80	min. 100	max. 150	min. 100	min. 8	min. -	max. -	min. -	min. -	min. -	min. -	max. -	min. -	min. -
EN AW-6063 [Al Mg0,7Si]	80 to 139	max. 80	min. 80	max. 140	min. 80	min. 11	min. -	max. -	min. -	min. -	min. -	min. -	max. -	min. -	min. -
EN AW-6951 [Al MgSi0,3Cu]	140 to 200	max. 80	min. 80	max. 140	min. 80	min. 12	min. -	max. -	min. -	min. -	min. -	min. -	max. -	min. -	min. -
EN AW-6060 [Al MgSi]	80 to 139	max. 70	min. 65	max. 130	min. 65	min. 12	min. 75	max. 150	min. 90	min. 5	min. 75	min. 100	max. 170	min. 120	min. 4
EN AW-8011A [Al FeSi(A)]	140 to 200	max. 70	min. 65	max. 130	min. 65	min. 16	min. 75	max. 150	min. 90	min. 6	min. 75	min. 100	max. 170	min. 120	min. 5
EN AW-8006 [Al Fe1,5Mn]	80 to 139 140 to 200	max. 95	min. 90	max. 140	min. 90	min. 15	min. 70	max. 150	min. 110	min. 10	min. 70	min. 90	max. 160	min. 120	min. 8
EN AW-8079 [Al Fe1Si]	80 to 139 140 to 200	max. 60	min. 60	max. 110	min. 60	min. 13	min. 65	max. 135	min. 95	min. 7	min. 65	min. -	max. -	min. -	min. -
		max. 60	min. 60	max. 110	min. 60	min. 16	min. 65	max. 135	min. 95	min. 8	min. 65	min. -	max. -	min. -	min. -

(continued)