



SLOVENSKI STANDARD

SIST EN 546-2:1998

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Aluminij in aluminijeve zlitine - Folija - 2. del: Mehanske lastnosti

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

Aluminium und Aluminiumlegierungen - Folien - Teil 2: Mechanische Eigenschaften

Aluminium et alliages d'aluminium - Feuilles minces - Partie 2: Caractéristiques mécaniques

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ICS:

77.150.10 Aluminijski izdelki Aluminium products

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EUROPEAN STANDARD

EN 546-2

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Descriptors: aluminium, aluminium alloys, wrought product, foil, mechanical properties

English version

**Aluminium and aluminium alloys - Foil - Part 2:
Mechanical properties**Aluminium et alliages d'aluminium - Feuilles
minces - Partie 2: Caractéristiques mécaniquesAluminium und Aluminiumlegierungen - Folien -
Teil 2: Mechanische Eigenschaften**High STANDARD PREVIEW
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CENEuropean Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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

Contents

Foreword 4

1 Scope 5

2 Normative references 5

3 Tensile testing 5

4 Mechanical properties 7

5 Rounding of test results 7

Table 1 : Longitudinal mechanical properties for converter foil 1) 8

Table 2 : Longitudinal mechanical properties for container foil 1) 9

Annex A (normative) Rules for rounding 10

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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of an identical text or by endorsement, at the latest by December 1996, and conflicting national standards shall be withdrawn at the latest by December 1996.

Within its programme of work, Technical Committee CEN/TC 132 entrusted CEN/TC 132/WG 6 "Foil and finstock" to prepare the following document for publication as a European Standard :

EN 546-2 Aluminium and aluminium alloys - Foil - Part 2 : Mechanical properties

This standard is part of a set of four standards. The other standards deal with :

EN 546-1 Aluminium and aluminium alloys - Foil - Part 1 : Technical conditions for inspection and delivery

EN 546-3 Aluminium and aluminium alloys - Foil - Part 3 : Tolerances on dimensions

EN 546-4 Aluminium and aluminium alloys - Foil - Part 4 : Special property requirements

According to the 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.

1 Scope

This Part of EN 546 specifies the mechanical properties of wrought aluminium and aluminium alloy foil.

It applies to flat rolled products.

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

The designations of aluminium and aluminium alloys and the temper designations used in this standard are specified in EN 573 parts 1 and 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.

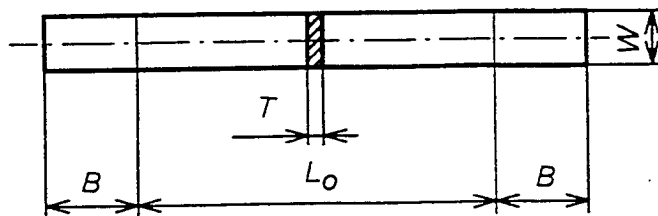
EN 515	Aluminium and aluminium alloys - Wrought products - Temper designations
EN 546-1	Aluminium and aluminium alloys - Foil - Part 1 : Technical conditions for inspection and delivery
EN 573-1	Aluminium and aluminium alloys - Chemical composition and form of wrought products - Part 1 : Numerical designation 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

3 Tensile testing

The selection and number of specimens and test pieces shall be as specified in EN 546-1. Preparation of test pieces shall be carried out as follows :

parallel sided test pieces (see figure 1) with a width of $15 \text{ mm} \pm 0,1 \text{ mm}$ and a gauge length of $50 \text{ mm} \pm 1 \text{ mm}$ or $100 \text{ mm} \pm 1 \text{ mm}$ shall be used. They shall be prepared using a double-bladed cutter or guillotine (see figure 2) or a precision ground sample shear of "punch and die" construction ;

the tensile test shall be carried out on suitably calibrated equipment. The test speed shall be in the range 5 % to 25 % of the gauge length per minute.



L_o = gauge length = (50 ± 1) mm or (100 ± 1) mm ;

W = width = $(15 \pm 0,1)$ mm ;

T = thickness of strip ;

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

Figure 1 : Parallel sided test piece

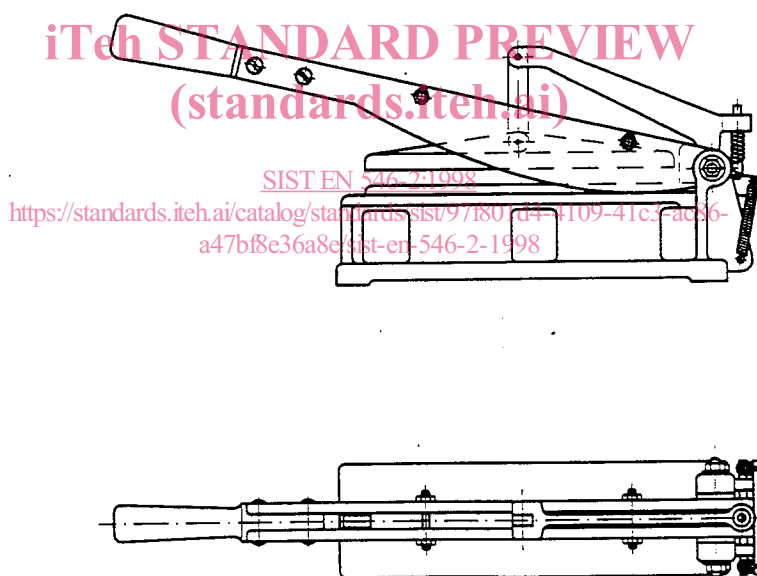


Figure 2 : Example of double-bladed cutter

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.

4 Mechanical properties

Mechanical properties of foil for converter / consumer and for container applications are specified in tables 1 and 2, respectively. For the elongation measurement, two different gauge lengths may be used. The choice of the gauge length, either 50 mm or 100 mm, shall be at the discretion of the producer 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.

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Table 1 : Longitudinal mechanical properties for converter foil ¹⁾

Material	Gauge range μm	Temper			
		O			H18 ²⁾
		Tensile strength R_m MPa		Elongation $A_{50\text{mm}}$ or $A_{100\text{mm}}$ %	Tensile strength R_m MPa
		min.	max.	min.	min.
EN AW-1050A [Al 99,5]	6 to 9	35	80	1	135
	10 to 24	40	85	1	135
	25 to 40	45	90	2	135
	41 to 89	45	95	4	135
	90 to 139	50	95	6	-
	140 to 200	50	95	10	-
EN AW-1200 [Al 99,0]	6 to 9	40	95	1	140
	10 to 24	45	100	1	140
	25 to 40	50	105	3	140
	41 to 89	55	105	6	140
	90 to 139	60	105	10	-
	140 to 200	60	105	14	-
EN AW-8079 [Al Fe1Si]	6 to 9	45	100	1	150
	10 to 24	50	105	1	150
	25 to 40	55	110	4	150
	41 to 89	60	110	8	150
	90 to 139	60	110	13	-
	140 to 200	60	110	16	-
EN AW-8006 [Al Fe1,5Mn]	6 to 9	80	135	1	170
	10 to 24	85	140	2	170
	25 to 40	85	140	6	170
	41 to 89	90	140	10	170
EN AW-8011A [Al FeSi(A)]	6 to 9	50	110	1	155
	10 to 24	55	115	1	155
	25 to 40	55	120	3	155
	41 to 89	65	130	7	155
EN AW-8111 [Al FeSi(B)]	6 to 9	55	105	2	-
	10 to 24	60	110	3	-
	25 to 40	70	120	11	-
	41 to 89	70	130	12	-
EN AW-8014 [Al Fe1,5Mn0,4]	6 to 9	70	130	1	160
	10 to 24	75	140	1	160
	25 to 40	75	145	6	160
	41 to 89	80	145	10	160

1) Converter foil is conventionally subdivided into :

- light gauge converter double rolled (6 μm to 70 μm) ;
- heavy gauge converter single rolled (35 μm to 200 μm) ;
- consumer foil double rolled (10 μm to 24 μm).

2) In H18 temper, maximum values for tensile strength and minimum values for elongation shall be subject to agreement between supplier and purchaser, if required.