
Aeronavtika – Aluminijska zlitina AL-P2014A - T6511 – Iztiskane palice in profili - a ali D ≤ 200 mm s kontrolo debelozrnatega obrobja

Aerospace series - Aluminium alloy AL-P2014A - T6511 - Extruded bar and section - a or D ≤ 200 mm with peripheral coarse grain control

Luft- und Raumfahrt - Aluminiumlegierung AL-P2014A-T6511 - Stranggepresste Stangen und Profile - a or D < 200 mm mit Kontrolle der Grobkornrandzone

Série aérospatiale - Alliage d'aluminium AL-P2014A - T6511 - Barres et profilés filés - a ou D ≤ 200 mm avec contrôle de la zone périphérique à gros grains

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Ta slovenski standard je istoveten z: EN 2635:2005

ICS:

49.025.20 Aluminij Aluminium

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EUROPEAN STANDARD

EN 2635

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2005

ICS 49.025.20

English Version

Aerospace series - Aluminium alloy AL-P2014A - T6511 -
Extruded bar and section - a or D \leq 200 mm with peripheral
coarse grain control

Série aérospatiale - Alliage d'aluminium AL-P2014A -
T6511 - Barres et profilés filés - a ou D \leq 200 mm avec
contrôle de la zone périphérique à gros grains

Luft- und Raumfahrt - Aluminiumlegierung AL-P2014A -
T6511 - Stranggepresste Stangen und Profile - a oder D \leq
200 mm mit Kontrolle der Grobkornrandzone

This European Standard was approved by CEN on 19 September 2005.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

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Foreword

This European Standard (EN 2635:2005) has been prepared by the European Association of Aerospace Manufacturers - Standardization (AECMA-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 AECMA, 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 April 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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Introduction

This standard is part of the series of EN metallic material standards for aerospace applications. The general organization of this series is described in EN 4258.

This standard has been prepared in accordance with EN 4500-2.

1 Scope

This standard specifies the requirements relating to:

Aluminium alloy AL-P2014A
T6511
Extruded bar and section
a or $D \leq 200$ mm
with peripheral coarse grain control

for aerospace applications.

This standard may also be used to supply material for use in the T6510 condition if specified by the purchaser on the order and the product is marked accordingly.

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2 Normative references

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The following referenced documents are indispensable for the application 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.

EN 4258, *Aerospace series — Metallic materials — General organization of standardization — Links between types of EN standards and their use.*

EN 4400-3, *Aerospace series — Aluminium and aluminium alloy wrought products — Technical specification — Part 3: Bar and section.* ¹⁾

EN 4500-2, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 2: Specific rules for aluminium, aluminium alloys and magnesium alloys.* ¹⁾

¹⁾ Published as AECMA Prestandard at the date of publication of this standard.

1	Material designation		Aluminium alloy AL-P2014A												
2	Chemical composition %	Element	Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Zr + Ti	Others		Al
													Each	Total	
		min.	0,50	–	3,9	0,40	0,20	–	–	–	–	–	–	–	–
max.	0,9	0,50	5,0	1,2	0,8	0,10	0,10	0,25	0,15	0,20	0,05	0,15			
3	Method of melting		–												
4.1	Form		Bar and section												
4.2	Method of production		Extruded												
4.3	Limit dimension(s)	mm	a or D ≤ 200												
5	Technical specification		EN 4400-3												

6.1	Delivery condition	T4511 ^a	T6511
	Heat treatment	500 °C ≤ θ ≤ 510 °C / WQ θ ≤ 40 °C + 1 % ≤ controlled stretched ≤ 3 % + θ = ambient / t ≥ 5 d	500 °C ≤ θ ≤ 510 °C / WQ θ ≤ 40 °C + 1 % ≤ controlled stretched ≤ 3 % + 155 °C ≤ θ ≤ 165 °C / 12 h ≤ t ≤ 20 h or 170 °C ≤ θ ≤ 180 °C / 5 h ≤ t ≤ 12 h
6.2	Delivery condition code	K	U
7	Use condition	T6511	T6511
	Heat treatment	Delivery condition 155 °C ≤ θ ≤ 165 °C / 12 h ≤ t ≤ 20 h or 170 °C ≤ θ ≤ 180 °C / 5 h ≤ t ≤ 12 h	Delivery condition

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Characteristics

8.1	Test sample(s)		See EN 4400-3.						
8.2	Test piece(s)		See EN 4400-3.						
8.3	Heat treatment		Use condition						
9	Dimensions concerned	mm	a or D ≤ 2,5	2,5 < a or D ≤ 10	10 < a or D ≤ 25	25 < a or D ≤ 75	75 < a or D ≤ 100	100 < a or D ≤ 150	150 < a or D ≤ 200
10	Thickness of cladding on each face	%	–	–	–	–	–	–	–
11	Direction of test piece		L	L	L	L	L	L	L
12	Temperature	θ °C	Ambient	Ambient	Ambient	Ambient	Ambient	Ambient	Ambient
13	Proof stress	R _{p0.2} MPa	≥ 370	≥ 385	≥ 415	≥ 440	≥ 435	≥ 420	≥ 390
14	T Strength	R _m MPa	≥ 415	≥ 435	≥ 460	≥ 490	≥ 480	≥ 465	≥ 435
15	Elongation	A %	A _{50 mm} ≥ 7	A _{50 mm} ≥ 7	≥ 7	≥ 7	≥ 7	≥ 7	≥ 7
16	Reduction of area	Z %	–						
17	Hardness		–						
18	Shear strength	R _c MPa	–						
19	Bending	k –	–						
20	Impact strength		–						
21	Temperature	θ °C	–						
22	Time	h	–						
23	C Stress	σ _a MPa	–						
24	Elongation	a %	–						
25	Rupture stress	σ _R MPa	–						
26	Elongation at rupture	A %	–						
27	Notes (see line 98)		a						

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44	External defects	–	See EN 4400-3.				
61	Internal defects	–	See EN 4400-3.				
82	Batch uniformity	–	See EN 4400-3.				
		7			T4511	T6511	
			Electrical conductivity	γ	MS/m	18,5 (Typical value)	22,0 (Typical value)
		or					
		7	Hardness	–	HB	115 (Typical value)	135 (Typical value)
	δ	≤ 16 per product		≤ 20 per product			
	Δ	≤ 24 per batch		≤ 30 per batch			
87	Extrusion back-end defect	–	See EN 4400-3.				
88	Peripheral coarse grain	–	See EN 4400-3.				
		7	Level A				
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95	Marking inspection	–	See EN 4400-3.				
96	Dimensional inspection	–	See EN 4400-3.				
98	Notes	–	^a T4510 if the use condition is T6510.				
99	Typical use	–	–				