SLOVENSKI STANDARD
SIST EN 2384:2001

01-januar-2001

Aerospace series - Aluminium alloy AL-P2014A T6511 - Extruded bars and sections a or D < or = 150 mm

Aerospace series - Aluminium alloy AL-P2014A T6511 - Extruded bars and sections a or D < or = 150 mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P2014A T6511 - Stranggepreßte Stangen und Profile a oder D < oder = 150 mm

Série aérospatiale - Alliage d'aluminium AL-P2014A T6511 - Barres et profilés filés a ou D < ou = 150 mm

Ta slovenski standard je istoveten z: **EN 2384:1992**

ICS:

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 2384

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Key words : Aircraft industry, metal bars, metal sections, aluminium alloys, specifications, chemical composition, dimensions, characteristics

English version

Aerospace series
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T6511
Extruded bars and sections
a or D ⩽ 150 mm

Série aérospatiale
Alliage d'aluminium AL-P2014A
T6511
Barres et profilés filés
a ou D ⩽ 150 mm

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T6511
Stranggepreßte Stangen und Profile
a oder D ⩽ 150 mm

This European Standard was accepted by CEN on 1992-03-09. CEN members are bound to comply with the requirements of CEN 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 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 CEN Central Secretariat has the same status as the official versions.

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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 Bruxelles

Foreword

This European Standard has been prepared by the European Association of Aerospace Manufacturers (AECMA).

After inquiries and votes carried out in accordance with the rules of this Association, this Standard has successively 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 March 1993, and conflicting national standards shall be withdrawn at the latest by March 1993.

In accordance with the Common CEN/CENELEC Rules 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 United Kingdom.

0 Introduction

For the use of this standard, see EN 2500-2.

1 Scope

This standard specifies the requirements relating to extruded bars and sections in aluminium alloy AL-P2014A, for use in the T6511 condition, a or D ≤ 150 mm, for aerospace applications.

This standard may also be used to supply material in the T6510 or T4510 condition if the purchaser specifies this condition on the order. In this case the designation of line 97 shall not be used.

2 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 2047 Beaded L-section aluminium alloy extrusions - Dimensions - Aerospace series [1)]

EN 2048 L-section aluminium alloy extrusions - Dimensions - Aerospace series [1)]

EN 2049 Channel section aluminium alloy extrusions - Dimensions - Aerospace series [1)]

EN 2050 T-section aluminium alloy extrusions - Dimensions - Aerospace series [1)]

EN 2070-3 Aerospace series - Aluminium and aluminium alloy wrought products - Technical specification - Part 3 - Bars and sections

EN 2134 Round aluminium alloy bars - Dimensions - Aerospace series [1)]

EN 2341 Aluminium and aluminium alloy square and rectangular extruded bars - Dimensions - Aerospace series [1)]

EN 2500-2 Aerospace series - Instructions for the drafting and use of metallic material standards - Part 2 - Specific requirements for aluminium, aluminium alloys and magnesium alloys [2)]

EN 2600 Aerospace series - Designation of metallic semi-finished products - Rules [2)].

1) Published as AECMA standard at the date of publication of this standard.
2) Published as AECMA pre-standard 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 Each	Others Total	Al
		min.	0,50	-	3,9	0,40	0,20	-	-	-	-	-	-	-	Base
		max.	0,9	0,50	5,0	1,2	0,8	0,10	0,10	0,25	0,20	0,15	0,05	0,15	
3	Method of melting		-												
4	Form Method of production Limit dimensions (mm)		Bars and sections Extruded a or D ≤ 150												
5	5.1 Technical specification		EN 2070-3												
	5.2 Dimensional standards		EN 2047, EN 2048, EN 2049, EN 2050, EN 2134, EN 2341												

6	6.1 Delivery condition and heat treatment	T4511 500°C ≤ θ ≤ 510°C / WQ θ ≤ 40°C + 1 % ≤ stretched ≤ 3 % and minor straightening allowable + θ = ambient / t ≥ 5 d	T6511 500°C ≤ θ ≤ 510°C / WQ θ ≤ 40°C + 1 % ≤ stretched ≤ 3 % and minor straightening allowable + 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 and heat treatment	T6511	
		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

Characteristics

8	Sample Test piece Heat treatment				- - Use condition: T6511					
9	Dimensions concerned			mm	a ≤ 2,5	2,5 < a ≤ 10	10 < a or D ≤ 25	25 < a or D ≤ 75	75 < a or D ≤ 100 1)	100 < a or D ≤ 150 1)
10	Thickness of cladding on each face			%	-					
11	Direction of test piece				L					
12	T	Temperature	θ	°C	Ambient temperature					
13		Proof stress	$R_{p0,2}$	MPa	≥ 370	≥ 385	≥ 415	≥ 440	≥ 435	≥ 420
14		Strength	Rm	MPa	≥ 415	≥ 435	≥ 460	≥ 490	≥ 480	≥ 465
15		Elongation	A	%	≥ 7 2)	≥ 7 2)	≥ 7	≥ 7	≥ 7	≥ 7
16		Reduction of area	Z	%	-					
17	Hardness				-					
18	Shear strength		R_c	MPa	-					
19	Bending		k	-	-					
20	Impact strength				-					
21	C	Temperature	θ	°C	-					
22		Time		h	-					
23		Stress	σ_a	MPa	-					
24		Elongation	a	%	-					
25		Rupture stress	σ_R	MPa	-					
26		Elongation at rupture	A	%	-					
27	Notes (see line 98)				1), 2)					

44	External defects	-	See EN 2070-3		
51	Macrostructure	7	Back end defects : see EN 2070-3		
61	Internal defects	-	See EN 2070-3		
82	Batch uniformity	1	See EN 2070-3		
		5		T4511	T6511
		7	Electrical conductivity	γ = 18,5 MS/m (typical value)	γ = 22 MS/m (typical value)
		or			
		7	Hardness	115 HB (typical value) $\delta \leq$ 16 HB per product $\Delta \leq$ 24 HB per batch	135 HB (typical value) $\delta \leq$ 20 HB per product $\Delta \leq$ 30 HB per batch
97	Designation		For extruded bars, see EN 2600. For extruded sections, see relevant drawing.		
98	Notes		1) Bar only 2) or $A_{50\ mm} \geq 6\%$		
99	Typical use				