



**SLOVENSKI STANDARD**  
**SIST EN 2318:2001**

**01-januar-2001**

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**Aerospace series - Aluminium alloy AL-P2024-T3511 - Extruded bars and sections  
1,2 mm < or = a or D < or = 150 mm**

Aerospace series - Aluminium alloy AL-P2024-T3511 - Extruded bars and sections 1,2  
mm < or = a or D < or = 150 mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P2024-T3511 - Stranggepreßte Stangen  
und Profile 1,2 mm < oder = a oder D < oder = 150 mm

Série aérospatiale - Alliage d'aluminium AL-P2024-T3511 - Barres et profilés filés 1,2  
mm < ou = a ou D < ou = 150 mm

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**Ta slovenski standard je istoveten z: EN 2318:1992**

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**ICS:**

49.025.20

Aluminij

Aluminium

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**en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 2318**

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

**English version**

**Aerospace series  
Aluminium alloy AL-P2024-  
T3511  
Extruded bars and sections  
 $1,2 \text{ mm} \leq a \text{ or } D \leq 150 \text{ mm}$**

**Série aérospatiale  
Alliage d'aluminium AL-P2024-  
T3511**

**Barres et profilés filés  
 $1,2 \text{ mm} \leq a \text{ ou } D \leq 150 \text{ mm}$**

**Luft- und Raumfahrt  
Aluminiumlegierung AL-P2024-  
T3511**

**Stranggeprägte Stangen und Profile  
 $1,2 \text{ mm} \leq a \text{ oder } D \leq 150 \text{ mm}$**

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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.

CEN members are the national standards organizations of Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxemburg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

**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.

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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.

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REPUBLICA SLOVENSKA  
INSTITUT ZA POLITIČNO, OBRAČUNSKO IN  
TEHNIČNO STANDARDIZACIJO  
Ljubljana, 15. avgust 2001  
.....T318  
PREMIJER REPUBLIKE SLOVENIJE

## 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-P2024-, for use in the T3511 condition,  $1,2 \text{ mm} \leq a \text{ or } D \leq 150 \text{ mm}$ , for aerospace applications.

This standard may also be used to supply material in the T3510 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 <sup>1)</sup>
- EN 2048 L-section aluminium alloy extrusions - Dimensions - Aerospace series <sup>1)</sup>
- EN 2049 Channel section aluminium alloy extrusions - Dimensions - Aerospace series <sup>1)</sup>
- EN 2050 T-section aluminium alloy extrusions - Dimensions - Aerospace series <sup>1)</sup>
- 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 <sup>1)</sup>
- EN 2341 Aluminium and aluminium alloy square and rectangular extruded bars -Dimensions - Aerospace series <sup>1)</sup>
- 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 <sup>2)</sup>
- EN 2600 Aerospace series - Designation of metallic semi-finished products - Rules <sup>2)</sup>.

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-P2024-											
2	Chemical composition %	Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti + Zr	Ti	Others		Al Base
												Each	Total	
		min.	-	-	3,8	0,30	1,2	-	-	-	-	-	-	
		max.	0,50	0,50	4,9	0,9	1,8	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 $1,2 \leq a \text{ or } D \leq 150$											
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		T3511 $490^\circ\text{C} \leq \theta \leq 500^\circ\text{C} / \text{WQ } \theta \leq 40^\circ\text{C}$ + 1 % $\leq$ stretched $\leq$ 3 % and minor straightening allowable + $\theta = \text{ambient} / t \geq 5 \text{ d}$											
	6.2 Delivery condition code		U											
7	Use condition and heat treatment		T3511 Delivery condition Characteristics											
8	Sample Test piece Heat treatment		- - - SIST EN 2318:2001 Use condition: T3511 <a href="https://standards.itech.ai/catalog/standards/sist/1e24ba1c-1167-4c09-8298-">https://standards.itech.ai/catalog/standards/sist/1e24ba1c-1167-4c09-8298-</a>											
9	Dimensions concerned	mm	$1,2 < a \leq 2,0$	$2,0 < a \leq 10$	$10 < a \text{ or } D \leq 25$	$25 < a \text{ or } D \leq 75$	$75 < a \text{ or } D \leq 100^{1)}$	$100 < a \text{ or } D \leq 150^{1)}$						
10	Thickness of cladding on each face	%	-											
11	Direction of test piece		L											
12	T	Temperature	$\theta$	$^\circ\text{C}$	Ambient temperature									
13		Proof stress	$R_{p0,2}$	MPa	$\geq 330$	$\geq 340$	$\geq 340$	$\geq 350$	$\geq 345$	$\geq 325$				
14		Strength	$R_m$	MPa	$\geq 440$	$\geq 460$	$\geq 460$	$\geq 480$	$\geq 470$	$\geq 450$				
15		Elongation	A	%	$\geq 12^{2)}$	$\geq 11^{3)}$	$\geq 10$	$\geq 10$	$\geq 10$	$\geq 8$				
16		Reduction of area	Z	%	-									
17	Hardness		-											
18	Shear strength	$R_c$	MPa	-										
19	Bending	k	-	-										
20	Impact strength		-											
21	C	Temperature	$\theta$	$^\circ\text{C}$	-									
22		Time		h	-									
23		Stress	$\sigma_B$	MPa	-									
24		Elongation	a	%	-									
25		Rupture stress	$\sigma_R$	MPa	-									
26		Elongation at rupture	A	%	-									
27	Notes (see line 98)		1), 2), 3)											

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		
		7	Electrical conductivity	$\gamma = 18 \text{ MS/m}$ (typical value)	
			or		
		7	Hardness	120 HB (typical value)	
			$\delta \leq 16 \text{ HB per product}$	$\Delta \leq 24 \text{ HB per batch}$	
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97	Designation		For extruded bars, see EN 2600. For extruded sections, see relevant drawing.		
98	Notes		1) Bar only 2) or $A_{50 \text{ mm}} \geq 11\%$ 3) or $A_{50 \text{ mm}} \geq 10\%$		
99	Typical use		-		