



BSI Standards Publication

**Aerospace series —
Aluminium alloy AL-P7175
— T73511 — Extruded bar
and section — a or D ≤ 150
mm**

National foreword

This British Standard is the UK implementation of EN 4293:2014.

The UK participation in its preparation was entrusted to Technical Committee ACE/61/-/24, Light Alloys for Aerospace Purposes.

A list of organizations represented on this committee can be obtained on request to its secretary.

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EUROPEAN STANDARD

EN 4293

NORME EUROPÉENNE

EUROPÄISCHE NORM

April 2014

ICS 49.025.20

English Version

**Aerospace series - Aluminium alloy AL-P7175 - T73511 -
Extruded bar and section - a or D ≤ 150 mm**

Série aérospatiale - Alliage d'aluminium AL-P7175 - T73511
- Barres et profilés filés - a ou D ≤ 150 mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P7175 -
T73511 - Stranggepresste Stangen und Profile - a oder D ≤
150 mm

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EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

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Foreword

This document (EN 4293:2014) has been prepared by the Aerospace and Defence Industries Association of Europe - Standardization (ASD-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 ASD, 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of an identical text or by endorsement, at the latest by October 2014, and conflicting national standards shall be withdrawn at the latest by October 2014.

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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 European Standard specifies the requirements relating to:

Aluminium alloy AL-P7175-
T73511
Extruded bar and section
a or $D \leq 150$ mm

for aerospace applications.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 ASD-STAN Prestandard at the date of publication of this standard (www.asd-stan.org).

1	Material designation		Aluminium alloy AL-P7175-										
2	Chemical composition %	Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others		Al
											Each	Total	
		min.	–	–	1,2	–	2,1	0,18	5,1	–	–	–	Base
max.	0,15	0,20	2,0	0,10	2,9	0,28	6,1	0,10	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 $D \leq 150$										
5	Technical specification		EN 4400-3										

6.1	Delivery condition		T73511									
	Heat treatment		$455\text{ °C} \leq \theta \leq 475\text{ °C} / \text{WQ } \theta \leq 40\text{ °C}$ + 1 % \leq controlled stretched $\leq 3\%$ + minor straightening + $105\text{ °C} \leq \theta \leq 125\text{ °C} / 6\text{ h} \leq t \leq 24\text{ h}$ + $172\text{ °C} \leq \theta \leq 182\text{ °C} / 6\text{ h} \leq t \leq 16\text{ h}$									
6.2	Delivery condition code		U									
7	Use condition		T73511									
	Heat treatment		Delivery condition									

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 $D \leq 10$	$10 < a$ or $D \leq 20$	$20 < a$ or $D \leq 50$	$50 < a$ or $D \leq 75$	$75 < a$ or $D \leq 120$	$120 < a$ or $D \leq 150$				
10	Thickness of cladding on each face	%	–	–	–	–	–	–				
11	Direction of test piece		L	L	L	L	L	L				
12	Temperature	θ	°C	Ambient	Ambient	Ambient	Ambient	Ambient	Ambient			
13	Proof stress	$R_{p0,2}$	MPa	≥ 400	≥ 420	≥ 415	≥ 410	≥ 390	≥ 370			
14	T Strength	R_m	MPa	≥ 470	≥ 485	≥ 485	≥ 475	≥ 470	≥ 450			
15	Elongation	A	%	$\geq 8^a$	≥ 8	≥ 8	≥ 8	≥ 7	≥ 7			
16	Reduction of area	Z	%	–	–	–	–	–	–			
17	Hardness	HB	–									
18	Shear strength	R_c	MPa									
19	Bending	k	–									
20	Impact strength		–									
21	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)		a									

32	Electrical conductivity	–	See EN 4400-3.		
		3	Measurement on the surface of the sample from which tensile specimens are taken.		
		7	$\gamma \geq 23$ MS/m	Acceptable	
			$22 \text{ MS/m} \leq \gamma < 23 \text{ MS/m}$	Acceptable if $R_{p0,2} L \leq R_{p0,2} \text{ min. L} + 85 \text{ MPa}$ or if stress corrosion test acceptable	
	$\gamma < 22$ MS/m	Non acceptable			
39	Stress corrosion for qualification	–	See EN 4400-3.		
		3	a or $D > 25$ mm		
		6	$\sigma = 70 \% R_{p0,2} \text{ min. L}$		
		7	$t = 20$ days		
40	Fracture toughness (K_{IC}) for qualification	–	See EN 4400-3.		
		7	Dimensions (mm)	$T - L$ $\text{MPa}\sqrt{\text{m}}$	
		$40 \leq a$ or $D \leq 150$	≥ 25		
44	External defects	–	See EN 4400-3.		
51	Macrostructure	–	See EN 4400-3.		
61	Internal defects	–	See EN 4400-3.		
82	Batch uniformity	–	See EN 4400-3.		
		7	Electrical conductivity		
			or		
			Hardness	–	HBW
δ	≤ 20 per product				
Δ	≤ 30 per batch				
95	Marking inspection	–	See EN 4400-3.		
96	Dimensional inspection	–	See EN 4400-3.		
98	Notes	–	a Or $A_{50\text{mm}} \geq 7 \%$.		
99	Typical use	–	–		

100	-	Product qualification	-	See EN 4400-3.
				Qualification programme to be agreed between manufacturer and purchaser.

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