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SIST EN 2512:2015

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EUROPEAN STANDARD

EN 2512

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2014

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English Version

**Aerospace series - Aluminium alloy AL-P7175 - T7351 - Plate -
6mm < a ≤ 100 mm**

Série aérospatiale - Alliage d'aluminium AL-P7175 - T7351 -
Tôles épaisses - 6 mm < a ≤ 100 mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P7175 -
T7351 - Platten - 6 mm < a ≤ 100 mm

This European Standard was approved by CEN on 4 January 2014.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

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

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

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

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Foreword

This document (EN 2512:2014) 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 April 2015, and conflicting national standards shall be withdrawn at the latest by April 2015.

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

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EN 2512:2014 (E)

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.

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1 Scope

This European Standard specifies the requirements relating to:

Aluminium alloy AL-P7175-
T7351
Plate
 $6 \text{ mm} < a \leq 100 \text{ mm}$

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 2131, *Aerospace series — Plates in aluminium alloys — Thickness $6 \text{ mm} < a \leq 160 \text{ mm}$ — Dimensions*

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

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

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¹⁾ Published as ASD-STAN Prestandard at the date of publication of this standard (www.asd-stan.org).

EN 2512:2014 (E)

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	–	–	–	–
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		Plate										
4.2	Method of production		Rolled										
4.3	Limit dimension(s)	mm	$6 < a \leq 100$										
5	Technical specification		EN 4400-1										

6.1	Delivery condition	T7351									
	Heat treatment	$460\text{ °C} \leq \theta \leq 480\text{ °C} / \text{WQ } \theta \leq 40\text{ °C}$ $+ 1,5\% \leq \text{controlled stretched} \leq 3\%$ $+ 100\text{ °C} \leq \theta \leq 135\text{ °C} / 3\text{ h} \leq t \leq 24\text{ h}^a$ $+ 155\text{ °C} \leq \theta \leq 175\text{ °C} / 8\text{ h} \leq t \leq 30\text{ h}^a$									
6.2	Delivery condition code	U									
7	Use condition	T7351									
	Heat treatment	Delivery condition									

Characteristics												
8.1	Test sample(s)		See EN 4400-1									
8.2	Test piece(s)		See EN 4400-1									
8.3	Heat treatment		Use condition									
9	Dimensions concerned	mm	$6 < a \leq 12$			$12 < a \leq 25$			$25 < a \leq 40$			
10	Thickness of cladding on each face	%	–									
11	Direction of test piece		L	LT	L	LT	L	LT	L	LT		
12	Temperature	θ	Ambient		Ambient		Ambient					
13	Proof stress	$R_{p0,2}$	MPa	≥ 395	≥ 390	≥ 395	≥ 390	≥ 395	≥ 390			
14	T Strength	R_m	MPa	≥ 470	≥ 480	≥ 470	≥ 480	≥ 460	≥ 470			
15	Elongation	A	%	$A_{50\text{mm}} \geq 7$	$A_{50\text{mm}} \geq 7$	≥ 7	≥ 7	≥ 6	≥ 6			
16	Reduction of area	Z	%	–								

continued

9	Dimensions concerned	mm	$40 < a \leq 60$			$60 < a \leq 80$			$80 < a \leq 100$			
10	Thickness of cladding on each face	%	–									
11	Direction of test piece		L	LT	ST	L	LT	ST	L	LT	ST	
12	Temperature	θ	°C		Ambient		Ambient		Ambient			
13	Proof stress	$R_{p0,2}$	MPa	≥ 360	≥ 370	≥ 340	≥ 340	≥ 350	≥ 330	≥ 340	≥ 340	≥ 320
14	T Strength	R_m	MPa	≥ 450	≥ 460	≥ 430	≥ 435	≥ 440	≥ 420	≥ 420	≥ 420	≥ 410
15	Elongation	A	%	≥ 6	≥ 6	$A_{4D} \geq 4$	≥ 6	≥ 6	$A_{4D} \geq 4$	≥ 6	≥ 6	$A_{4D} \geq 4$
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	C Elongation	a	%	–								
25	Rupture stress	σ_R	MPa	–								
26	Elongation at rupture	A	%	–								
27	Notes (see line 98)		a									

32	Electrical conductivity	–	See EN 4400-1.	
		7	$\gamma \geq 23,0$ MS/m	Acceptable
			$22,0$ MS/m $\leq \gamma < 23,0$ MS/m	Acceptable if $R_{p0,2} LT \leq R_{p0,2}$ min. LT + 85 MPa or if stress corrosion test is acceptable.
			$\gamma < 22,0$ MS/m	Not acceptable
39	Stress corrosion for qualification	–	See EN 4400-1.	
		6	$\sigma = 75$ % $R_{p0,2}$ min. LT (Not applicable for $a \leq 40$ mm)	
		7	$t \geq 20$ days	
40	Fracture toughness (K_{1C}) for qualification	–	See EN 4400-1.	
		7	Dimensions (mm)	LT MPa \sqrt{m}
	$25 < a \leq 100$		≥ 25	
44	External defects	–	See EN 4400-1.	
47	Notch/yield ratio $R_e/R_{p0,2}$	–	See EN 4400-1.	
61	Internal defects	–	See EN 4400-1.	
82	Batch uniformity	–	See EN 4400-1.	
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95	Marking inspection	–	See EN 4400-1.	
96	Dimensional inspection	–	See EN 4400-1.	
		7	See EN 2131.	
98	Notes	–	^a Artificial ageing may be carried out using the following alternative single stage method: heating to a temperature of 155 °C $\leq \theta \leq 175$ °C at a rate not exceeding 20 °C/h and soaking at this temperature for 8 h $\leq t \leq 30$ h.	
99	Typical use	–	–	