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SIST EN 3338:2006

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EUROPEAN STANDARD

EN 3338

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2005

ICS 49.025.20

English Version

Aerospace series - Aluminium alloy AL-P7050 - T74511 -
Extruded bar and section - a or $D \leq 150$ mm with peripheral
coarse grain control

Série aérospatiale - Alliage d'aluminium AL-P7050 -
T74511 - Barres et profilés filés - a ou $D \leq 150$ mm avec
contrôle de la zone périphérique à gros grains

Luft- und Raumfahrt - Aluminiumlegierung AL-P7050 -
T74511 - Stranggeprägte Stangen und Profile - a oder $D \leq$
150 mm mit Kontrolle der Grobkorrandzone

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.



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

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Foreword

This European Standard (EN 3338:2005) 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-P7050-
T74511
Extruded bar and section
a or $D \leq 150$ mm
with peripheral coarse grain control

for aerospace applications.

This standard may also be used to supply material in the T74510 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-P7050-											
2	Chemical composition %	Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Others		Al
												Each	Total	
		min.	-	-	2,0	-	1,9	-	5,7	0,08	-	-	-	-
max.	0,12	0,15	2,6	0,10	2,6	0,04	6,7	0,15	0,06	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 ≤ 150											
5	Technical specification		EN 4400-3											

6.1	Delivery condition		T74511											
	Heat treatment		470 °C ≤ θ ≤ 485 °C / WQ θ ≤ 40 °C + 1 % ≤ controlled stretched ≤ 3 % + 105 °C ≤ θ ≤ 125 °C / 6 h ≤ t ≤ 24 h + 167 °C ≤ θ ≤ 180 °C / 6 h ≤ t ≤ 16 h											
6.2	Delivery condition code		U											
7	Use condition		T74511											
	Heat treatment		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 ≤ 150											
10	Thickness of cladding on each face	%	-											
11	Direction of test piece		L											
12	Temperature	θ	°C	Ambient										
13	T	Proof stress	R _{p0.2}	MPa	≥ 435									
14		Strength	R _m	MPa	≥ 505									
15		Elongation	A	%	A or A _{50mm} ≥ 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)		-											

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32	Electrical conductivity	–	See EN 4400-3.			
		7	$\gamma \geq 23,0$ MS/m		Acceptable	
			$22,0$ MS/m $\leq \gamma \leq 23,0$ MS/m		Acceptable if $R_{p0,2} L \leq 495$ MPa or if stress corrosion test results are acceptable (see line 39).	
			$\gamma < 22,0$ MS/m		Not acceptable	
39	Stress corrosion	–	See EN 4400-3.			
		6	$\sigma = 240$ MPa			
		7	$t \geq 20$ d			
40	Fracture toughness	–	See EN 4400-3.			
		7	Dimensions (mm)	L-T MPa \sqrt{m}	T-L MPa \sqrt{m}	
			$25 < a$ or $D \leq 50$	≥ 28	≥ 24	
			$50 < a$ or $D \leq 100$	≥ 27	≥ 22	
			$100 < a$ or $D \leq 150$	≥ 26	≥ 21	
44	External defects	–	See EN 4400-3.			
49	Exfoliation corrosion	–	See EN 4400-3.			
		7	Exfoliation corrosion shall not be greater than that of grade EB.			
61	Internal defects	–	See EN 4400-3.			
82	Batch uniformity	–	See EN 4400-3.			
		7	Electrical conductivity	γ	MS/m	23,5 (Typical value)
			or			
		7	Hardness	EN 3338:2006	HB	145 (Typical value)
$\delta \leq 20$ per product	$\Delta \leq 30$ per batch					
87	Extrusion back-end defect	–	See EN 4400-3.			
88	Peripheral coarse grain	–	See EN 4400-3.			
		7	Level A			
95	Marking inspection	–	See EN 4400-3.			
96	Dimensional inspection	–	See EN 4400-3.			
98	Notes	–	–			
99	Typical use	–	–			