BRITISH STANDARD AEROSPACE SERIES

BS EN
4291:2005

Aluminium alloy AL-P8090 — Forging stock

The European Standard EN 4291:2005 has the status of a British Standard

ICS 49.025.20

BSI
British Standards

National foreword

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Summary of pages

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English version

Aerospace series - Aluminium alloy AL-P8090 - Forging stock

Série aérospatiale - Alliage d'aluminium AL-P8090 - Produits destinés à la forge

Luft- und Raumfahrt - Aluminiumlegierung AL-P8090 - Schmiedevormaterial

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Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This document (EN 4291:2005) 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.

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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-P8090-
Forging stock

for aerospace application.

2 Normative references

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 2082-2, *Aerospace series — Aluminium alloy forging stock and forgings — Technical specification — Part 2: Forging stock.*

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

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)]

EN 6018, *Aerospace series — Test methods for metallic materials — Determination of density according to displacement method.* [1)]

1) Published as AECMA Prestandard at the date of publication of this standard.

1	Material designation		Aluminium alloy AL-P8090-												
2	Chemical composition %	Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Li	Zr	Ti	Others		Al
													Each	Total	
		min.	–	–	1,0	–	0,6	–	–	2,2	0,04	–	–	–	Base
		max.	0,20 [a]	0,30 [a]	1,6	0,10	1,3	0,10	0,25	2,7	0,16	0,10	0,05 [a]	0,15	
3	Method of melting		–												
4.1	Form		Ingot or billet												
4.2	Method of production		Cast												
4.3	Limit dimension(s)	mm	*a* or *D* ≤ 500												
5	Technical specification		EN 2082-2												

6.1	Delivery condition	O3
	Heat treatment	–
6.2	Delivery condition code	U
7	Use condition	O3
	Heat treatment	Delivery condition

Characteristics

8.1	Test sample(s)			Forged bar [b]		
8.2	Test piece(s)			See EN 2082-2.		
8.3	Heat treatment			T89 (See line 29)		
9	Dimensions concerned		mm	–		
10	Thickness of cladding on each face		%	–		
11	Direction of test piece			L	LT	ST
12	T	Temperature	θ °C	Ambient	Ambient	Ambient
13	T	Proof stress	$R_{p0,2}$ MPa	≥ 330 [c]	≥ 305 [c]	≥ 300 [c]
14	T	Strength	R_m MPa	≥ 430 [c]	≥ 420 [c]	≥ 380 [c]
15	T	Elongation	A %	≥ 3 [c]	≥ 3 [c]	≥ 1 [c]
16	T	Reduction of area	Z %	–		
17	Hardness			–		
18	Shear strength	R_c	MPa	–		
19	Bending	k	–	–		
20	Impact strength			–		
21	C	Temperature	θ °C	–		
22	C	Time	h	–		
23	C	Stress	σ_a MPa	–		
24	C	Elongation	a %	–		
25	C	Rupture stress	σ_R MPa	–		
26	C	Elongation at rupture	A %	–		
27	Notes (see line 98)			a, b, c		

29	Reference heat treatment	–	Delivery condition + hand forged + 525 °C ≤ θ ≤ 535 °C / WQ θ ≤ 35 °C + 2 % ≤ cold deformed ≤ 5 % + 170 °C ≤ θ ≤ 185 °C / 20 h ≤ t ≤ 30 h
34	Grain size	–	G ≤ 0,5
44	External defects	–	See EN 2082-2.
61	Internal defects	–	See EN 2082-2.
68	Density	1	EN 6018
		2	The "capability clause" applies
		7	$\rho \leq 2{,}56\ kg/dm^3$
95	Marking inspection	–	See EN 2082-2.
96	Dimensional inspection	–	See EN 2082-2.
98	Notes	–	[a] Chemical analyses taken from the molten metal stream shall exhibit the following maximum impurity levels: Fe ≤ 0,06 %, Si ≤ 0,06 %, Na ≤ 9 ppm., Ca ≤ 120 ppm. [b] Forging dimensions and manufacturing parameters shall be as agreed between ingot supplier and forgemaster. [c] The "capability clause" applies.
99	Typical use	–	

100	–	Product qualification	–	Qualification programme to be agreed between manufacturer and purchaser.

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W4 4AL