



SLOVENSKI STANDARD
SIST EN 4286:2005

01-november-2005

Aerospace series - Aluminium alloy AL-P8090-T89 - Die forgings - a <125 mm

Aerospace series - Aluminium alloy AL-P8090-T89 - Die forgings - a <125 mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P8090-T89 - Gesenkschmiedestücke - a <125 mm

Série aérospatiale - Alliage d'aluminium AL-P8090-T89 - Pièces matricées - a <125 mm

Ta slovenski standard je istoveten z: EN 4286:2005

ICS:

49.025.20 Aluminij Aluminium

SIST EN 4286:2005 **en**

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EUROPEAN STANDARD

EN 4286

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2005

ICS 49.025.20

English version

**Aerospace series - Aluminium alloy AL-P8090-T89 - Die forgings
- a ≤125 mm**Série aérospatiale - Alliage d'aluminium AL-P8090-T89 -
Pièces matriquées - a ≤125 mmLuft- und Raumfahrt - Aluminiumlegierung AL-P8090-T89 -
Gesenschmiedestücke - a ≤125 mm

This European Standard was approved by CEN on 22 April 2005.

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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.

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ca5702bf75f/sist-en-4286-2005](https://standards.iteh.ai/catalog/standards/sist/32945bd5-9c42-4a80-b365-ca5702bf75f/sist-en-4286-2005)EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 4286:2005) 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 December 2005, and conflicting national standards shall be withdrawn at the latest by December 2005.

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-P8090-
T89
Die forgings
 $a \leq 125$ mm

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 2082-3, *Aerospace series — Aluminium alloy forging stock and forgings — Technical specification — Part 3: Pre-production and production forgings.*

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

EN 4291, *Aerospace series — Aluminium alloy AL-P8090- — Forging stock.* 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⁾

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.

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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	-	-	-
max.	0,20	0,30	1,6	0,10	1,3	0,10	0,25	2,7	0,16	0,10	0,05	0,15			
3	Method of melting		-												
4.1	Form		Die forgings												
4.2	Method of production		Forged from forging stock EN 4291												
4.3	Limit dimension(s)	mm	$a \leq 125$												
5	Technical specification		EN 2082-3												

6.1	Delivery condition		T89												
	Heat treatment		525 °C ≤ θ ≤ 535 °C / WQ θ ≤ 35 °C + 2 % ≤ cold deformed ≤ 5 % + 170 °C ≤ θ ≤ 180 °C / 20 h ≤ t ≤ 30 h												
6.2	Delivery condition code		U												
7	Use condition		T89												
	Heat treatment		Delivery condition												

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Characteristics
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8.1	Test sample(s)		See EN 2082-3.																
8.2	Test piece(s)		See EN 2082-3. https://standards.iteh.ai/catalog/standards/sist/32945bd5-9c42-4a80-b365-ca5702bf75f/sist-en-4286-2005																
8.3	Heat treatment		Use condition.																
9	Dimensions concerned	mm	$a \leq 125$																
10	Thickness of cladding on each face	%	-																
11	Direction of test piece		L				LT				ST								
12	Temperature	θ	°C		Ambient				Ambient				Ambient						
13	Proof stress	$R_{p0,2}$	MPa		≥ 330				≥ 305				≥ 300						
14	T	Strength	R_m		MPa		≥ 430				≥ 420				≥ 380				
15		Elongation	A		%		≥ 3				≥ 3				≥ 1				
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)		-																

40	Fracture toughness (K_{1C})	–	See EN 2082-3.			
		7	Dimensions mm	L-T MPa \sqrt{m}	T-L MPa \sqrt{m}	S-L MPa \sqrt{m}
			$20 \leq a \leq 125$	≥ 18	≥ 16	≥ 11
44	External defects	–	See EN 2082-3.			
51	Macrostructure	–	See EN 2082-3.			
61	Internal defects	–	See EN 2082-3.			
68	Density	1	EN 6018			
		2	The "capability clause" applies			
		7	$\rho \leq 2,56 \text{ kg/dm}^3$			
82	Batch uniformity	–	See EN 2082-3.			
		7	Electrical conductivity	γ	MS/m	11,6 (Typical value)
			or			
			Hardness	HB	145 (Typical value)	
					$\delta \leq 20$ per product	$\Delta \leq 30$ per batch
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95	Marking inspection	–	See EN 2082-3.			
96	Dimensional inspection	–	See EN 2082-3.			
98	Notes	–	–			
99	Typical use	–	–			

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