



**SLOVENSKI STANDARD**  
**SIST EN 2086:2005**

**01-april-2005**

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**Aeronavtika - Aluminijeva zlitina AL-P2618A - T851 - Prosto in utopno kovani izkovki - a  $\leq$  150 mm**

Aerospace series - Aluminium alloy AL-P2618A - T851 - Hand and die forgings - a  $\leq$  150 mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P2618A - T851 - Freiform- und Gesenkschmiedestücke - a  $\leq$  150 mm

Série aérospatiale - Alliage d'aluminium AL-P2618A - T851 - Pièces forgées et matricées - a  $\leq$  150 mm

**Ta slovenski standard je istoveten z: EN 2086:2004**

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**ICS:**

49.025.20      Aluminij                                      Aluminium

**SIST EN 2086:2005**                                      **en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**EN 2086**

December 2004

ICS 49.025.20

English version

## Aerospace series - Aluminium alloy AL-P2618A - T851 - Hand and die forgings - $a \leq 150$ mm

Série aérospatiale - Alliage d'aluminium AL-P2618A - T851  
- Pièces forgées et matricées -  $a \leq 150$  mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P2618A -  
T851 - Freiform- und Gesenkschmiedestücke -  $a \leq 150$  mm

This European Standard was approved by CEN on 15 July 2004.

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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION  
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## Foreword

This document (EN 2086:2004) 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 June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

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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EN 2086:2004 (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.

## 1 Scope

This standard specifies the requirements relating to:

Aluminium alloy AL-P2618A  
T851  
Hand and die forgings  
 $a \leq 150$  mm

for aerospace applications.

## 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 2486, *Aerospace series – Aluminium alloy AL-P2618A – Forging stock* <sup>1)</sup>
- EN 4258, *Aerospace series – Metallic materials – General organization of standardization – Links between types of EN standards and their use*
- EN 4400-7, *Aerospace series – Aluminium and aluminium- and magnesium- alloys – Technical specification – Part 7: Aluminium alloy forgings* <sup>2)</sup>
- 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* <sup>1)</sup>

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

2) In preparation at the date of publication of this standard

1	Material designation	Aluminium alloy AL-P2618A												
2	Chemical composition %	Element	Si	Fe	Cu	Mn	Mg	Ni	Zn	Ti + Zr	Ti	Others		Al
												Each	Total	
		min.	0,15	0,9	1,8	–	1,2	0,8	–	–	–	–	–	–
max.	0,25	1,4	2,7	0,25	1,8	1,4	0,15	0,25	0,20	0,05	0,15			
3	Method of melting	–												
4.1	Form	Hand and die forgings												
4.2	Method of production	Forged from forging stock to EN 2486												
4.3	Limit dimension(s)	mm	a ≤ 150											
5	Technical specification	EN 4400-7												

6.1	Delivery condition	T351					T851				
	Heat treatment	525 °C ≤ θ ≤ 535 °C <sup>a</sup> / WQ Boiling water + 1 % ≤ controlled stretched ≤ 5 % + θ = ambient / t ≥ 5 d					525 °C ≤ θ ≤ 535 °C <sup>a</sup> / WQ Boiling water + 1 % ≤ controlled stretched ≤ 5 % + 185 °C ≤ θ ≤ 195 °C / 16 h ≤ t ≤ 24 h				
6.2	Delivery condition code	K					U				
7	Use condition	T851					T851				
	Heat treatment	Delivery condition + 185 °C ≤ θ ≤ 195 °C / 16 h ≤ t ≤ 24 h					Delivery condition				

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Characteristics

8.1	Test sample(s)	SIST EN 2086:2005 See EN 4400-7.										
8.2	Test piece(s)	<a href="https://standards.itech.ai/catalog/standards/sist/2e09b1e5-7d76-4a97-8de2-56d8d0b2557a/sist-en-2086-2005">https://standards.itech.ai/catalog/standards/sist/2e09b1e5-7d76-4a97-8de2-56d8d0b2557a/sist-en-2086-2005</a> See EN 4400-7.										
8.3	Heat treatment	Use condition										
9	Dimensions concerned	mm	a ≤ 90			90 < a ≤ 120			120 < a ≤ 150			
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			
13	Proof stress	R <sub>p0,2</sub>	MPa	≥ 385	≥ 375	≥ 375	≥ 380	≥ 370	≥ 365	≥ 370	≥ 360	≥ 355
14	T Strength	R <sub>m</sub>	MPa	≥ 440	≥ 435	≥ 425	≥ 430	≥ 425	≥ 415	≥ 420	≥ 415	≥ 405
15	Elongation	A	%	≥ 6	≥ 4,5	≥ 3	≥ 6	≥ 4,5	≥ 3	≥ 6	≥ 4,5	≥ 3
16	Reduction of area	Z	%	–								
17	Hardness	–										
18	Shear strength	R <sub>c</sub>	MPa	–								
19	Bending	k	–	–								
20	Impact strength	–										
21	Temperature	θ	°C			–						
22	Time	h		–								
23	Stress	σ <sub>a</sub>	MPa	–								
24	Elongation	a	%	–								
25	Rupture stress	σ <sub>R</sub>	MPa	–								
26	Elongation at rupture	A	%	–								
27	Notes (see line 98)	a										

## EN 2086:2004 (E)

44	External defects	–	See EN 4400-7.				
51	Macrostructure	–	See EN 4400-7.				
61	Internal defects	–	See EN 4400-7.				
82	Batch uniformity	–	See EN 4400-7.				
		5			T351	T851	
		7	Electrical conductivity	$\gamma$	MS/m	17,5 (typical value)	21,0 (typical value)
		or					
		7	Hardness	–	HB	115 (typical value)	135 (typical value)
				$\delta$		$\leq 16$ per product	$\leq 20$ per product
$\Delta$	$\leq 24$ per batch			$\leq 30$ per batch			
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95	Marking inspection	–	See EN 4400-7.				
96	Dimensional inspection	–	See EN 4400-7.				
98	Notes	–	<sup>a</sup> A longer solution heat treatment time than is usual may be required for this alloy, typically $4 \text{ h} \leq t \leq 24 \text{ h}$ .				
99	Typical use	–	–				