



SLOVENSKI STANDARD
SIST EN 3982:2016

01-januar-2016

Aeronavtika - Aluminijeva zlitina AL-P7050 - AlZn6CuMgZr - T7451 - Plošče- 6 mm < a ≤ 160 mm

Aerospace series - Aluminium alloy AL-P7050 - AlZn6CuMgZr - T7451 - Plates - 6 mm < a ≤ 160 mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P7050 - AlZn6CuMgZr - T7451 - Platten - 6 mm < a ≤ 160 mm

Série aérospatiale - Alliage d'aluminium AL-P7050 - AlZn6CuMgZr - T7451 - Tôles épaisses - 6 mm < a ≤ 160 mm

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Ta slovenski standard je istoveten z: EN 3982:2015

ICS:

49.025.20 Aluminij

Aluminium

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EUROPEAN STANDARD

EN 3982

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2015

ICS 49.025.20

English Version

Aerospace series - Aluminium alloy AL-P7050 - AlZn6CuMgZr - T7451 - Plates - $6 \text{ mm} < a \leq 160 \text{ mm}$

Série aérospatiale - Alliage d'aluminium AL-P7050 -
AlZn6CuMgZr - T7451 - Tôles épaisses - $6 \text{ mm} < a \leq$
160 mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P7050 -
AlZn6CuMgZr - T7451 - Platten - $6 \text{ mm} < a \leq 160 \text{ mm}$

This European Standard was approved by CEN on 14 March 2013.

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.



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

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

Contents	Page
European foreword	3
Introduction	4
1 Scope	5
2 Normative references	5

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European foreword

This document (EN 3982:2015) 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 May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

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 3982:2015 (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 standard specifies the requirements relating to:

Aluminium alloy AL-P7050-
AlZn6CuMgZr
T7451
Plates
 $6 \text{ mm} < a \leq 160 \text{ mm}$

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 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⁾

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

EN 3982:2015 (E)

1	Material designation		Aluminium alloy AL-P7050 — AlZn6CuMgZr - T7451											
2	Chemical composition %	Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Zr	Ti	Others		Al
		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	Base
3	Method of melting		-											
4.1	Form		Plate											
4.2	Method of production		Rolled											
4.3	Limit dimension(s)	mm	$6 < a \leq 160$											
5	Technical specification		EN 4400-1											

6.1	Delivery condition		W51					T7451				
	Heat treatment		470 °C ≤ θ ≤ 485 °C / WQ θ ≤ 40 °C + 1,5 % ≤ controlled stretched ≤ 3 % + θ = ambient					470 °C ≤ θ ≤ 485 °C / WQ θ ≤ 40 °C + 1,5 % ≤ controlled stretched ≤ 3 % + 115 °C ≤ θ ≤ 125 °C / 4 h ≤ t ≤ 24 h ^a + 157 °C ≤ θ ≤ 175 °C / 12 h ≤ t ≤ 30 h ^a				
6.2	Delivery condition code		W					U				
7	Use condition		T7451					T7451				
	Heat treatment		Delivery condition + 115 °C ≤ θ ≤ 125 °C / 4 h ≤ t ≤ 24 h ^a + 157 °C ≤ θ ≤ 175 °C / 12 h ≤ t ≤ 30 h ^a					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	$6 < a \leq 12,5$			$12,5 < a \leq 50$			$50 < a \leq 75$		
10	Thickness of cladding on each face	%	-			-			-		
11	Direction of test piece		L	LT		LT		L	LT	ST	
12	Temperature	θ	Ambient			Ambient			Ambient		
13	Proof stress	R _{p0,2}	MPa	≥ 440	≥ 440	≥ 440	≥ 440	≥ 435	≥ 435	≥ 405	
14	T Strength	R _m	MPa	≥ 510	≥ 510	≥ 510	≥ 510	≥ 505	≥ 505	≥ 470	
15	Elongation	A	%	A _{50mm} ≥ 9	A _{50mm} ≥ 8	≥ 9	≥ 8	≥ 8	≥ 7	≥ 2,5 ^b	
16	Reduction of area	Z	%	-							

continued

9	Dimensions concerned	mm	$75 < a \leq 100$			$100 < a \leq 125$			$125 < a \leq 160$		
10	Thickness of cladding on each face	%	-			-			-		
11	Direction of test piece		L	LT	ST	L	LT	ST	L	LT	ST
12	Temperature	θ	Ambient			Ambient			Ambient		
13	Proof stress	R _{p0,2}	MPa	≥ 425	≥ 425	≥ 400	≥ 420	≥ 420	≥ 395	≥ 415	≥ 395
14	T Strength	R _m	MPa	≥ 495	≥ 495	≥ 470	≥ 490	≥ 490	≥ 460	≥ 485	≥ 460
15	Elongation	A	%	≥ 8	≥ 5	≥ 2,5 ^b	≥ 8	≥ 5	≥ 2,5 ^b	≥ 7	≥ 2 ^c
16	Reduction of area	Z	%	-							
17	Hardness	HBW	-								
18	Shear strength	R _c	MPa	-							
19	Bending	k	-								
20	Impact strength		-								
21	Temperature	θ	-								
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, b, c								

32	Electrical conductivity	-	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 + 70 MPa or if stress corrosion test is acceptable.		
			$\gamma < 22,0$ MS/m	Not acceptable		
39	Stress corrosion	-	EN 4400-1			
		2	The "capability clause" applies			
		6	$\sigma = 240$ MPa			
		7	$t \geq 20$ d			
40	Fracture toughness (K_{1c})	-	EN 4400-1			
		7	Dimensions mm	LT MPa \sqrt{m}	TL MPa \sqrt{m}	SL MPa \sqrt{m}
			$25 < a \leq 50$	≥ 32	≥ 27	-
			$50 < a \leq 75$	≥ 30	≥ 26	≥ 23
			$75 < a \leq 100$	≥ 28	≥ 25	≥ 23
			$100 < a \leq 125$	≥ 27	≥ 24	≥ 23
			$125 < a \leq 160$	≥ 26	≥ 24	≥ 23
44	External defects	-	EN 4400-1			
47	Notch/yield ratio $R_e/R_{p0,2}$	-	EN 4400-1			
49	Exfoliation corrosion	-	EN 4400-1			
		7	Exfoliation corrosion shall not be greater than that of grade EB.			
61	Internal defects	-	EN 4400-1			
82	Batch uniformity	-	EN 4400-1			
95	Marking inspection	-	EN 4400-1			
96	Dimensional inspection	-	EN 4400-1			
98	Notes	-	<p>a Artificial ageing may be carried out using the following alternative single stage method: heating to a temperature of $157\text{ }^\circ\text{C} \leq \theta \leq 175\text{ }^\circ\text{C}$ at a rate not exceeding $20\text{ }^\circ\text{C/h}$ and soaking at this temperature for $12\text{ h} \leq t \leq 30\text{ h}$.</p> <p>b Alternatively $A_{4D} \geq 3$ if required by the purchaser.</p> <p>c Alternatively $A_{4D} \geq 2,5$ if required by the purchaser.</p>			
99	Typical use	-	-			