SLOVENSKI STANDARD
SIST EN 2633:2016

01-januar-2016

Nadomešča:
SIST EN 2633:2001

Aeronavtika - Aluminijeva zlitina AL-P2024 - AlCu4Mg1 - T3511 - Iztiskane palice in profili - 1,2 mm ≤ De ≤ 160 mm s kontrolo debelozrnatega obrobja

Aerospace series - Aluminium alloy AL-P2024 - AlCu4Mg1 - T3511 - Extruded bars and sections - 1,2 mm ≤ De ≤ 160 mm with peripheral coarse grain control

Luft- und Raumfahrt - Aluminiumlegierung AL-P2024 - AlCu4Mg1 - T3511 - Stranggepresste Stangen und Profile - 1,2 mm ≤ De ≤ 160 mm mit Kontrolle der Grobkornrandzone

Série aérospatiale - Alliage d'aluminium AL-P2024 - AlCu4Mg1 - T3511 - Barres et profilés filés - 1,2 mm ≤ De ≤ 160 mm avec contrôle de la zone périphérique à gros grains

Ta slovenski standard je istoveten z: **EN 2633:2015**

ICS:

49.025.20	Aluminij	Aluminium

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EUROPEAN STANDARD

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EN 2633

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English Version

Aerospace series - Aluminium alloy AL-P2024 - AlCu4Mg1 - T3511 - Extruded bars and sections - 1,2 mm ≤ De ≤ 160 mm with peripheral coarse grain control

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Luft- und Raumfahrt - Aluminiumlegierung AL-P2024 - AlCu4Mg1 - T3511 - Stranggepresste Stangen und Profile - 1,2 mm ≤ De ≤ 160 mm mit Kontrolle der Grobkornrandzone

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

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

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

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European foreword

This document (EN 2633:2015) 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of an identical text or by endorsement, at the latest by May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.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.

This document supersedes EN 2633:1993.

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.

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-P2024
AlCu4Mg1
T3511
Extruded bar and section
1,2 mm ≤ D_e ≤ 160 mm
with peripheral coarse grain control

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 4050-4, *Aerospace series — Test method for metallic materials — Ultrasonic inspection of bars, plates, forging stock and forgings — Part 4: Acceptance criteria*

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

1	Material designation		Aluminium alloy AL-P2024 — AlCu4Mg1 – T3511											
2	Chemical composition %	Element	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Zr + Ti	Others		Al
												Each	Total	
		min.	–	–	3,8	0,30	1,2	–	–	–	–	–	–	Base
		max.	0,50	0,50	4,9	0,9	1,8	0,10	0,25	0,15	0,20	0,05	0,15	
3	Method of melting													
4.1	Form		Bars and sections											
4.2	Method of production		Extruded											
4.3	Limit dimension(s)	mm	$1{,}2 \leq D_e \leq 160$											
5	Technical specification		EN 4400-3											

6.1	Delivery condition	T3511
	Heat treatment	490 °C ≤ θ ≤ 500 °C / WQ θ ≤ 40 °C + 1 % ≤ controlled stretched ≤ 3 % and minor straightening allowable + θ = ambient / t ≥ 5 d
6.2	Delivery condition code	U
7	Use condition	T3511
	Heat treatment	Delivery condition

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	$1{,}2 \leq D_e \leq 2{,}0$	$2{,}0 < D_e \leq 10$	$10 < D_e \leq 25$	$25 < D_e \leq 75$	$75 < D_e \leq 100$	$100 < D_e \leq 160$
10	Thickness of cladding on each face		%	–					
11	Direction of test piece			L					
12	T	Temperature	θ	°C	Ambient					
13	T	Proof stress	$R_{p0,2}$	MPa	≥ 330	≥ 340	≥ 340	≥ 350	≥ 345	≥ 325
14	T	Strength	R_m	MPa	≥ 440	≥ 460	≥ 460	≥ 480	≥ 470	≥ 450
15	T	Elongation	A	%	≥ 12 (or A_{50mm} ≥ 11)	≥ 11 (or A_{50mm} ≥ 11)	≥ 10	≥ 10	≥ 10	≥ 8
16	T	Reduction of area	Z	%	–	–	–	–	–	–
17	Hardness		HBW	–	–					
18	Shear strength		R_c	MPa	–					
19	Bending		k	–	–					
20	Impact strength		K	J	–					
21	C	Temperature	θ	°C	–					
22	C	Time	t	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						

44	External defects	–	EN 4400-3	
61	Internal defects	–	EN 4400-3	
		1	See EN 4050-4.	
		7	28 mm ≤ D_e ≤ 60 mm – Class 3 D_e > 60 mm – Class 2	
82	Batch uniformity	–	EN 4400-3	
		7	Electrical conductivity	γ = 18 MS/m (typical value)
		or		
		7	Hardness	120 HBW (typical value)
				δ ≤ 16 HBW per product / Δ ≤ 24 HBW per batch
87	Extrusion back-end defect	–	EN 4400-3	
88	Peripheral coarse grain	–	EN 4400-3	
		7	Level A	
95	Marking inspection	–	EN 4400-3	
96	Dimensional inspection	–	EN 4400-3	
98	Notes	–	[a] Bar only.	
99	Typical use	–	–	