

BS EN 2704:2015



BSI Standards Publication

**Aerospace series — Aluminium  
alloy AL-P2024 — AlCu4Mg1 —  
T3511 — Drawn bar —  
De ≤ 75 mm**

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**National foreword**

This British Standard is the UK implementation of EN 2704:2015.

The UK participation in its preparation was entrusted to Technical Committee ACE/61/-/24, Light Alloys for Aerospace Purposes.

A list of organizations represented on this committee can be obtained on request to its secretary.

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Published by BSI Standards Limited 2015

ISBN 978 0 580 82078 6

ICS 49.025.20

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 30 November 2015.

**Amendments/corrigenda issued since publication**

Date	Text affected
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EUROPEAN STANDARD

**EN 2704**

NORME EUROPÉENNE

EUROPÄISCHE NORM

November 2015

ICS 49.025.20

English Version

**Aerospace series - Aluminium alloy AL-P2024 - AlCu4Mg1  
- T3511 - Drawn bars -  $De \leq 75$  mm**

Série aérospatiale - Alliage d'aluminium AL-P2024 -  
AlCu4Mg1 - T3511 - Barres étirées -  $De \leq 75$  mm

Luft- und Raumfahrt - Aluminiumlegierung AL-P2024 -  
AlCu4Mg1 - T3511 - Gezogene Stangen -  $De \leq 75$  mm

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

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

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## European foreword

This document (EN 2704:2015) 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of an identical text or by endorsement, at the latest by May 2016, and conflicting national standards shall be withdrawn at the latest by May 2016.

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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-P2024  
AlCu4Mg1  
T3511  
Drawn bar  
 $D_e \leq 75$  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 2004-1, *Aerospace series — Test methods for aluminium and aluminium alloy products — Part 1: Determination of electrical conductivity of wrought aluminium alloys products*

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*<sup>1)</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>

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

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EN 2704:2015 (E)

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	-	-	-	-	-	-	-
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		Bar											
4.2	Method of production		Drawn											
4.3	Limit dimension(s)	mm	$D_e \leq 75$											
5	Technical specification		EN 4400-3											

6.1	Delivery condition		T3511											
	Heat treatment		Solution treated $490\text{ °C} \leq \theta \leq 500\text{ °C}$ / WQ $\theta \leq 40\text{ °C}$ + 1,5 % $\leq$ controlled stretched $\leq 3\%$ + minor straightening permitted + $\theta = \text{ambient}$ / $t \geq 5\text{ d}$											
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		T3511												
9	Dimensions concerned	mm	$D_e \leq 75$												
10	Thickness of cladding on each face	%	-												
11	Direction of test piece		L												
12	Temperature	$\theta$	°C	Ambient											
13	Proof stress	$R_{p0,2}$	MPa	$\geq 315$											
14	T Strength	$R_m$	MPa	$\geq 440$											
15	Elongation	A	%	$\geq 13^a$											
16	Reduction of area	Z	%												
17	Hardness	HBW	-	120 (for information)											
18	Shear strength	$R_c$	MPa	-											
19	Bending	k	-	-											
20	Impact	K	J	-											
21	Temperature	$\theta$	°C	-											
22	Time	t	h	-											
23	C Stress	$\sigma_a$	MPa	-											
24	Elongation	a	%	-											
25	Rupture stress	$\sigma_R$	MPa	-											
26	Elongation at rupture	A	%	-											
27	Notes (see line 98)		a												



32	Electrical conductivity	-	EN 4400-3
		1	See EN 2004-1.
		7	$17 \text{ MS/m} \leq \gamma \leq 20 \text{ MS/m}$
44	External defects	-	EN 4400-3
61	Internal defects	-	EN 4400-3
		1	See EN 4050-4.
		7	Class 3
95	Marking inspection	-	EN 4400-3
96	Dimensional inspection	-	EN 4400-3
98	Notes	-	<sup>a</sup> $A_{50 \text{ mm}} \geq 12 \%$ for thicknesses $D_e \leq 10 \text{ mm}$ .
99	Typical use	-	-

100	-	Product qualification	-	EN 4400-3
				Qualification programme to be agreed between manufacturer and purchaser.



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