BS EN 2709:2018

BSI Standards Publication

Aerospace series - Aluminium alloy 2024- - T3510 - Bars and sections - 1,2 mm ≤ (a or D) ≤ 150 mm - With peripheral coarse grain control

EUROPEAN STANDARD

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EUROPÄISCHE NORM

EN 2709

November 2018

ICS

English Version

Aerospace series - Aluminium alloy 2024- - T3510 - Bars and sections - 1,2 mm ≤ (a or D) ≤ 150 mm - With peripheral coarse grain control

Série aérospatiale - Alliage d'aluminium 2024- - T3510 - Barres et profilés - 1,2 mm ≤ (a ou D) ≤ 150 mm - Limitation à la zone périphérique à gros grains

Luft- und Raumfahrt - Aluminiumlegierung 2024- - T3510 - Stangen und Profile - 1,2 mm ≤ (a oder D) ≤ 150 mm - Mit Kontrolle der Grobkornrandzone

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European foreword

This document (EN 2709:2018) 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of an identical text or by endorsement, at the latest by May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.

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Introduction

This European 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 European Standard has been prepared in accordance with EN 4500-2.

1 Scope

This European Standard specifies the requirements relating to:

Aluminium alloy 2024-
T3510
Bars and sections
1,2 mm ≤ (*a* or *D*) ≤ 150 mm
With peripheral coarse grain control

for aerospace applications.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 2004-1, *Aerospace series — Test methods for aluminium and aluminium alloy products — Part 1: Determination of electrical conductivity of wrought aluminium alloy products*

EN 2047, *Aerospace series — Beaded L-section, extruded in aluminium alloys — Dimensions*

EN 2048, *Aerospace series — Extruded L-section, extruded in aluminium alloys — Dimensions*

EN 2049, *Aerospace series — Extruded channel section, extruded in aluminium alloys — Dimensions*

EN 2050, *Aerospace series — Extruded T-section, in aluminium alloys — Dimensions*

EN 2070-1, *Aerospace series — Aluminium and aluminium alloy wrought products — Technical specification — Part 1: General requirements*

EN 2070-3, *Aerospace series — Aluminium and aluminium alloy wrought products — Technical specification — Part 3: Bar and section*

EN 2134, *Aerospace series — Round bars, extruded in aluminium and aluminium alloys, diameter 10 mm ≤ D ≤ 220 mm — Dimensions*

EN 2341, *Aerospace series — Aluminium and aluminium alloy — Square and rectangular extruded bars — Dimensions* [1)]

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

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)]

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Requirements

See Table 1.

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1) Published as ASD-STAN Prestandard at the date of publication of this standard by AeroSpace and Defence industries Association of Europe - Standardization (ASD-STAN), http://www.asd-stan.org/

Table 1 — Requirements for Aluminium alloy 2024- T3510 — Bars and sections

1	Material designation			Aluminium alloy 2024-											
2	Chemical composition %	Element		Si	Fe	Cu	Mn	Mg	Cr	Ni	Zn	Ti	Ti+Zr	Others		Al
														Each	Total	
		min.		–	–	3,8	0,30	1,2	–	–	–	–	–	–	–	Rem.
		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	$1,2 \leq (a \text{ or } D) \leq 150$											
5	Technical specification			See EN 2070-1 and EN 2070-3 EN 2047 to EN 2050, EN 2134 and EN 2341.											

6.1	Delivery condition	T3510
	Heat treatment	Solution treated 495 °C ± 5 °C/WQ $\theta \leq 40$ °C + 1,5 ≤ controlled stretched ≤ 3 %/No straightening after stretching allowed + Naturally aged $t \geq 5$ d
6.2	Delivery condition code	–
7	Use condition	T3510
	Heat treatment	Delivery condition

Characteristics

8.1	Test sample(s)			–							
8.2	Test piece(s)			–							
8.3	Heat treatment			T3510							
9	Dimensions concerned	a or D	mm	≥ 1,2 ≤ 2,0	> 2,0 ≤ 10	> 10 ≤ 25	> 25 ≤ 75	> 75 ≤ 100	> 100 ≤ 150		
10	Thickness of cladding on each face		%	–							
11	Direction of test piece			L	L	L	L	L	L		
12	T	Temperature	θ	°C	Ambient						
13		Proof stress	$R_{p0,2}$	MPa*	≥ 330	≥ 340	≥ 340	≥ 350	≥ 345	≥ 325	
14		Strength	R_m	MPa*	≥ 440	≥ 460	≥ 460	≥ 480	≥ 470	≥ 450	
15		Elongation	A	%	≥ 12 [a]	≥ 11 [a]	≥ 10	≥ 10	≥ 10	≥ 8	
16		Reduction of area	Z	%	–						
17	Hardness (HB)			120 (for information)							
18	Shear strength		R_c	MPa*	–						
19	Bending		k	–	–						
20	Impact strength			–							
21	C	Temperature	θ	°C	–						
22		Time		h	–						
23		Stress	σ_a	MPa*	–						
24		Elongation	a	%	–						
25		Rupture stress	σ_R	MPa*	–						
26		Elongation at rupture	A	%	–						
27	Notes (see line 98)			*, a							

28	–	–	–
32	Electrical conductivity	–	See EN 2004-1.
		7	17 MS/m ≤ γ ≤ 20 MS/m (for information)
34	Grain size	–	See EN 2070-3 – Level A (Table 5).
95	Marking inspection	–	–
96	Dimensional inspection	–	–
98	Notes	–	* 1 MPa = 1 N/mm^2. a $A_{50mm.}$
99	Typical use	–	–

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

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