



BSI Standards Publication

**Aerospace series —
Titanium alloy TI-P64001
(Ti-6Al-4V) — Annealed
— Extruded section
— $De \leq 150$ mm —
 $900 \text{ MPa} \leq Rm \leq 1\,160 \text{ MPa}$**

National foreword

This British Standard is the UK implementation of EN 3355:2012. It partially supersedes BS 3TA 11:2009.

The UK participation in its preparation was entrusted to Technical Committee ACE/61/-/49, Titanium and its Alloys for Aerospace Purposes.

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

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EUROPEAN STANDARD

EN 3355

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English Version

**Aerospace series - Titanium alloy TI-P64001 (Ti-6Al-4V) -
Annealed - Extruded section - $De \leq 150$ mm - 900 MPa $\leq R_m \leq$
 $1\ 160$ MPa**

Série aéronautique - Alliage de titane TI-P64001 (Ti-6Al-4V)
- Recuit - Profils filés - $De \leq 150$ mm - 900 MPa $\leq R_m \leq$
 $1\ 160$ MPa

Luft- und Raumfahrt - Titanlegierung TI-P64001 (Ti-6Al-4V)
- Geglüht - Strangpreßprofile - $De \leq 150$ mm - 900 MPa \leq
 $R_m \leq 1\ 160$ MPa

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Foreword

This document (EN 3355:2012) 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of an identical text or by endorsement, at the latest by September 2012, and conflicting national standards shall be withdrawn at the latest by September 2012.

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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 4500-4.

1 Scope

This European Standard specifies the requirements relating to:

Titanium alloy TI-P64001 (Ti-6Al-4V)
Annealed
Extruded section
 $D_e \leq 150$ mm
 $900 \text{ MPa} \leq R_m \leq 1\,160 \text{ MPa}$

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 2032-2, *Aerospace series — Metallic materials — Part 2: Coding of metallurgical condition in delivery condition*

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

EN 4500-4, *Aerospace series — Metallic materials — Rules for drafting and presentation of material standards — Part 4: Specific rules for titanium and titanium alloys*¹

EN 4800-002, *Aerospace series — Titanium and titanium alloys — Technical specification — Part 002: Bar and section*

¹ Published as ASD-STAN Standard at the date of publication of this standard by Aerospace and Defence Industries Association of Europe-Standardization (ASD-STAN), (www.asd-stan.org).

BS EN 3355:2012
EN 3355:2012 (E)

1	Material designation		Titanium alloy Ti-P64001(Ti-6Al-4V)											
2	Chemical composition %	Element	Al	V	O	N	O+2N	H	Fe	C	Y	Others		Ti
												Each	Total	
		min.	5,50	3,50	–	–	–	–	–	–	–	–	–	–
max.	6,75	4,50	0,20	0,03	0,25	0,012 5	0,30	0,08	0,005 0	0,10	0,40			
3	Method of melting		See EN 4800-002.											
4.1	Form		Extruded section											
4.2	Method of production		Extruded ($\alpha + \beta$ or β processed)											
4.3	Limit dimension(s)	mm	$D_e \leq 150$											
5	Technical specification		EN 4800-002											

6.1	Delivery condition		Annealed										
	Heat treatment		690 °C $\leq \theta \leq$ 840 °C / $t \geq$ 30 min AC or cooled in inert atmosphere ^a										
6.2	Delivery condition code		U ^b										
7	Use condition		Delivery condition										
	Heat treatment		–										

Characteristics

8.1	Test sample(s)		See EN 4800-002.										
8.2	Test piece(s)		See EN 4800-002.										
8.3	Heat treatment		Use condition										
9	Dimensions concerned	mm	$D_e \leq 150$										
10	Thickness of cladding on each face	%	–										
11	Direction of test piece		L ^c										
12	Temperature	θ	°C	Ambient									
13	Proof stress	$R_{p0.2}$	MPa	≥ 830									
14	T Strength	R_m	MPa	$900 \leq R_m \leq 1160$									
15	Elongation	A	%	≥ 8									
16	Reduction of area	Z	%	≥ 20									
17	Hardness		–										
18	Shear strength	R_c	MPa	–									
19	Bending	k	–	–									
20	Impact strength		–										
21	Temperature	θ	°C	–									
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										

30	Microstructure	–	See EN 4800-002.
		2	Each extruded section back end
		3	The sample shall represent the full cross section
		7	Criteria to be agreed between the manufacturer and the purchaser
44	External defects	–	See EN 4800-002.
		1	Visual examination
61	Internal defects	–	See EN 4800-002.
74	Surface contamination	–	See EN 4800-002.
95	Marking inspection	–	See EN 4800-002.
96	Dimensional inspection	–	See EN 4800-002.
98	Notes	–	<p>a If after annealing, any straightening or stretching operations are performed on extruded section below 550 °C, the extruded section shall be stress relieved by heating to a temperature $550\text{ °C} \leq \theta \leq 700\text{ °C} / t \geq 30\text{ min/AC}$ or cooled in inert atmosphere.</p> <p>b According to EN 2032-2.</p> <p>c If required, properties for LT direction to be agreed between manufacturer and purchaser.</p>
99	Typical use	–	–

100	-	Product qualification	-	See EN 4800-002.
Qualification programme to be agreed between manufacturer and purchaser.				

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