



# SLOVENSKI STANDARD SIST EN 3464:2010

01-januar-2010

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Ta slovenski standard je istoveten z: **EN 3464:2009**

**ICS:**

49.025.30 Titan Titanium

**SIST EN 3464:2010 en,de**

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EUROPEAN STANDARD

EN 3464

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2009

ICS 49.025.30

English Version

**Aerospace series - Titanium alloy TI-P64001 (Ti-6Al-4V) -  
Annealed - Plate - 6 mm < a ≤ 100 mm**

Série aérospatiale - Alliage de titane TI-P64001 (Ti-6Al-4V)  
- Recuit - Plaques - 6 mm < a ≤ 100 mm

Luft- und Raumfahrt - Titanlegierung TI-P64001 (Ti-6Al-4V)  
- Geglüht - Platten - 6 mm < a ≤ 100 mm

This European Standard was approved by CEN on 5 October 2009.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

## Foreword

This document (EN 3464:2009) 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 April 2010, and conflicting national standards shall be withdrawn at the latest by April 2010.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

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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 4500-4.

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**EN 3464:2009 (E)****1 Scope**

This European Standard specifies the requirements relating to:

Titanium alloy TI-P64001 (Ti-6Al-4V)  
Annealed  
Plate  
6 mm < a ≤ 100 mm

for aerospace applications.

**2 Normative references**

The following referenced documents are indispensable for the application 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 3114-003, *Aerospace series — Test method — Microstructure of ( $\alpha + \beta$ ) titanium alloy wrought products — Part 003: Microstructure of plate*

EN 4050-4, *Aerospace series — Test method for metallic materials — Ultrasonic inspection of bars, plates, forging stock and forgings — Part 4: Acceptance criteria<sup>1)</sup>*

EN 4800-001, *Aerospace series — Titanium and titanium alloys — Technical specification — Part 001: Plate, sheet and strip<sup>2)</sup>*

EN ISO 643, *Steels — Micrographic determination of the apparent grain size (ISO 643:2003)*

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1) Published as ASD Prestandard at the date of publication of this standard.

2) Published as ASD Prestandard at the date of publication of this standard.

1	Material designation		Titanium alloy Ti-P64001 (Ti-6Al-4V)									
2	Chemical composition %	Element	Al	V	O+2N	N	H	C	Fe	Others <sup>a</sup>		Ti
										Each	Total	
		min.	5,50	3,50	–	–	–	–	–	–	–	–
max.	6,75	4,50	0,25	0,03	0,0125	0,08	0,30	0,10	0,40			
3	Method of melting		See EN 4800-001.									
4.1	Form		Plate									
4.2	Method of production		–									
4.3	Limit dimension(s)	mm	6 < a ≤ 100									
5	Technical specification		EN 4800-001									

6.1	Delivery condition		Annealed								
	Heat treatment		690 °C ≤ $\theta$ ≤ 840 °C / t ≥ 30 min / AC or inert atmosphere								
6.2	Delivery condition code		U								
7	Use condition		Delivery condition								
	Heat treatment		–								

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8.1	Test sample(s)		–								
8.2	Test piece(s)		<a href="https://standards.iteh.ai/catalog/standards/sist/e7da0ae9-41e4-458b-a502-73e0084342f8/sist-en-3464-2010">https://standards.iteh.ai/catalog/standards/sist/e7da0ae9-41e4-458b-a502-73e0084342f8/sist-en-3464-2010</a>								
8.3	Heat treatment		Use condition								
9	Dimensions concerned	mm	6 < a ≤ 12		12 < a ≤ 40		40 < a ≤ 100				
10	Thickness of cladding on each face	%	–								
11	Direction of test piece		See EN 4800-001.		See EN 4800-001.		See EN 4800-001.		ST		
12	Temperature	$\theta$	°C		Ambient						
13	Proof stress	R <sub>p0,2</sub>	MPa		≥ 830		≥ 830		≥ 830		
14	T Strength	R <sub>m</sub>	MPa		900 ≤ R <sub>m</sub> ≤ 1 160		900 ≤ R <sub>m</sub> ≤ 1 160		900 ≤ R <sub>m</sub> ≤ 1 160		
15	Elongation	A	%		≥ 10		≥ 8		≥ 6		
16	Reduction of area	Z	%		–		≥ 20		≥ 15		
17	Hardness		–								
18	Shear strength	R <sub>c</sub>	MPa		–						
19	Bending	k	–		–						
20	Impact strength		–								
21	Temperature	$\theta$	°C		–						
22	Time		h		–						
23	Stress	$\sigma_a$	MPa		–						
24	Elongation	a	%		–						
25	Rupture stress	$\sigma_R$	MPa		–						
26	Elongation at rupture	A	%		–						
27	Notes (see line 98)		a								

## EN 3464:2009 (E)

30	Microstructure	–	See EN 4800-001.			
		1	EN 3114-003			
		7	$a$ mm	$6 < a \leq 30$	Acceptable microstructure	Unacceptable microstructure
					3 T 1 to 3 T 19	3 T 20 and 3 T 21
					3 T 22 to 3 T 27	3 T 28 to 3 T 30
					3 T 31 to 3 T 33	3 T 34 to 3 T 38
					3 T 100 and 3 T 101, if incidence less than 5 per cm <sup>2</sup> of the sampling section	3 T 100 and 3 T 101, if incidence of 5 or more per cm <sup>2</sup> of the sampling section
					–	3 T 102 to 3 T 106
					3 A 1 to 3 A 8	–
		$30 < a \leq 100$	–	3 T 200 to 3 T 202		
3 T 1 to 3 T 19	3 T 20 and 3 T 21					
3 T 22 to 3 T 38	–					
3 T 100 to 3 T 102	3 T 103 and 3 T 104					
3 T 105	–					
3 T 106, if incidence less than 5 per cm <sup>2</sup> of the sampling section	3 T 106, if incidence of 5 or more per cm <sup>2</sup> of the sampling section					
3 A 1 to 3 A 8	–					
–	3 T 200 to 3 T 202					
34	Grain size	–	EN ISO 643			
44	External defects	–	See EN 4800-001.			
61	Internal defects	–	See EN 4800-001.			
		1	EN 4050-4			
		7	Class 5			
74	Surface contamination	–	See EN 4800-001.			
95	Marking inspection	–	See EN 4800-001.			
96	Dimensional inspection	–	See EN 4800-001.			
98	Notes	–	<sup>a</sup>	Determination not required for routine acceptance.		
99	Typical use	–	–			

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

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