SIST

SLOVENSKI STANDARD
SIST EN 4675:2011

01-december-2011

Aeronavtika - Titan Ti-P63002 (Ti5Al5Mo5V3Cr0,4Fe) - Rm ≥ 1300 MPa - Palice - De < 110 mm

Aerospace series - Titanium Ti-P63002 (Ti5Al5Mo5V3Cr0,4Fe) - Rm ≥ 1 300 MPa - Bars - De < 110 mm

Luft- und Raumfahrt - Titan Ti-P63002 (Ti5Al5Mo5V3Cr0,4Fe) - Rm ≥ 1 300 MPa - Stangen - De < 110 mm

Série aérospatiale - Titanium Ti-P63002 (Ti5Al5Mo5V3Cr0,4Fe) - Rm ≥ 1 300 MPa - Barres - De < 110 mm

Ta slovenski standard je istoveten z: **EN 4675:2011**

ICS:

49.025.30	Titan	Titanium

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EUROPEAN STANDARD

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English Version

Aerospace series - Titanium Ti-P63002 (Ti5Al5Mo5V3Cr0.4Fe) - Rm ≥ 1 300 MPa - Bars - De < 110 mm

Série aérospatiale - Titanium Ti-P63002 (Ti5Al5Mo5V3Cr0.4Fe) - Rm ≥ 1 300 MPa - Barres - De < 110 mm

Luft- und Raumfahrt - Titan Ti-P63002 (Ti5Al5Mo5V3Cr0.4Fe) - Rm ≥ 1 300 MPa - Stangen - De < 110 mm

This European Standard was approved by CEN on 9 October 2010.

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

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Foreword

This document (EN 4675:2011) 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of an identical text or by endorsement, at the latest by December 2011, and conflicting national standards shall be withdrawn at the latest by December 2011.

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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 standard has been prepared in accordance with EN 4500-4.

1 Scope

This European Standard specifies the requirements relating to:

Titanium Ti-P63002 (Ti5Al5Mo5V3Cr0.4Fe)
$R_m \geq 1\ 300$ MPa
Bars
$D_e < 100$ 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 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)]

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

1	Material designation		Ti-P63002 (Ti5Al5Mo5V3Cr0,4Fe)											
2	Chemical composition %	Element	Al	Mo	V	Cr	Fe	O	C	N	Y	Other		Ti
												Each	Total	
		min.	4,40	4,00	4,00	2,50	0,30	–	–	–	–	–	–	Base
		max.	5,70	5,50	5,50	3,50	0,50	0,18	0,10	0,05	0,005	0,10	0,30	
3	Method of melting		Vacuum melted. Final melting by consumable electrode.											
4.1	Form		Bars											
4.2	Method of production		Hot rolled.											
4.3	Limit dimension(s)	mm	D_e < 110											
5	Technical specification		EN 4800-002											
6.1	Delivery condition		Non heat treated.											
	Heat treatment		–											
6.2	Delivery condition code		F											
7	Use condition		Solution treated and precipitation aged.											
	Heat treatment		15 °C to 40 °C below beta-transus/ t = 1 h / AC or inert gas + 540 °C ≤ θ ≤ 650 °C / t ≥ 8 h / AC											

Characteristics

8.1	Test sample(s)				See EN 4800-002.		
8.2	Test piece(s)				See EN 4800-002.		
8.3	Heat treatment				Solution treated and aged.		
9	Dimensions concerned			mm	D ≤ 75	75 < D ≤ 110	
10	Thickness of cladding on each face			%			
11	Direction of test piece				L	L	T [a]
12	T	Temperature	θ	°C	Ambient		
13		Proof stress	$R_{p0,2}$	MPa	≥ 1 200	≥ 1 200	≥ 1 200
14		Strength	R_m	MPa	≥ 1 300	≥ 1 300	≥ 1 300
15		Elongation	A	%	≥ 6	≥ 6	≥ 4
16		Reduction of area	Z	%	≥ 10	≥ 10	≥ 8
17	Hardness				–		
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		

30	Microstructure	-	See EN 4800-002.	
		4	From locations representing the top and the bottom end of each batch.	
		5	15 °C to 40 °C below the beta-transus / t = 1 h / AC or inert gas + 540 °C ≤ θ ≤ 650 °C / t ≥ 4 h / AC	
		7	Shall consist of primary alpha phase in a matrix of aged beta phase. Continuous alpha phase network along prior beta phase grain boundaries is not acceptable.	
44	External defects	–	See EN 4800-002.	
51	Macrostructure	–	See EN 4800-002.	
		4	From location representing the top and the bottom end of each batch.	
		5	Delivery condition	Beta transus – 20 °C / 1 h / WQ or AC
		7	D ≤ 50 mm: 2 MA2 50 mm < D < 110 mm: 2 MA3	No beta fleck (No range without primary alpha phase greater than 0,76 mm × 0,76 mm).
61	Internal defects	–	See EN 4800-002.	
		7	Class 5	
86	β-transus temperature	–	See EN 4800-002.	
95	Marking inspection	–	See EN 4800-002.	
96	Dimensional inspection	–	See EN 4800-002.	
98	Notes	–	[a] Test sample over 55 mm thickness.	
99	Typical use	–	–	