

44E 39

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**INSPECTION
CERTIFICATE**

EN 10204-3.1 AS 9100EN ISO 9001 CERT. № 01 117 04 8312

CERTIFICATE № 24696Y11C

Purchaser: Tirus International SA., Switzerland

Date: 21.11.2011

Quality/alloy: Ti-6Al-4V

Condition of delivery: Hot Rolled, Machined, Annealed & Pickled

Contract: 82640349TEK Annex 14

Terms of delivery: AMS 4928S, ASTM B 348-10, BS 37A11:2009, BS 7252-3 Part.3(1997), WL 3.7164 Part.2:1990, AIR 9183:21/11/1996, ISO 5832-3 Part.3:1996(E), AMS 6931A;MSRR 8652 iss. 16

Purchaser order: TISA 11-0006622; Tirus UK DO-00011329

Bar Nr

Units

Weight, (kg)

Object

Dimensions (mm) or Drawing №

Heat №

Lot №

Chemical Composition, %

Ti-remainder

BAR

 dia 65^{+0,65/-0} × 3000-4000

8-31-04-157

927

Requirement:

AMS 4928S, BS 37A11:2009, BS 7252-3 Part.3(1997), WL 3.7164 Part.2:1990, AIR 9183:21/11/1996, ISO 5832-3 Part.3:1996(E), AMS 6931A;ASTM B 348-10;MSRR 8652 iss. 16

Heat treatment

Residuals,%

Requirement:	Tensile strength				Elongation				Reduction of area				In the part, % as-pickled				Heat treatment				Macrostructure testing As per AMS 4928S par. 3.6; AMS 2380F Level 10 A1			
	A1	V	Fe	C	N	O	Y	H	max	max	max	max	max	max	max	max	each	total	-	-	Residuals,%			
AMS 6931A, AMS 4928S	5,5 -	3,5 -	max	max	max	0,14 -	max	max									max	max						
ASTM B 348-10	6,75	4,5	0,25	0,08	0,030	0,20	0,0050	0,010									0,10	0,40						
ISO 5832-3 Part.3:1996(E)	6,53	4,08	0,19	0,006	0,002	0,194	<0,001	0,0004									<0,10	0,0586						
BS 7252-3:1997	6,54	4,09	0,19	0,004	0,003	0,194	<0,001	0,0018									<0,10	0,0624						

Requirement:

AMS 4928S, BS 37A11:2009, BS 7252-3 Part.3(1997), WL 3.7164 Part.2:1990, AIR 9183:21/11/1996, ISO 5832-3 Part.3:1996(E), AMS 6931A;ASTM B 348-10;MSRR 8652 iss. 16

Heat treatment

Residuals,%

Sample	H	Beta-Transus	T°C
		1/2R	actual

Microstructure testing

As per ETTC 2/Fig. A3, by area A5;

AIR 9183 (21.11.1996) par. 3.3; AMS 4928S, AMS 6931A par. 3.5.12.2,

3.5.1.3; Free from alpha-case.

Ultrasonic inspection

As per QCTR 6342 iss. 2; MIL-STD-2154 (30.0931982)CIA,

Longitudinal wave, Type 1; AMS 2631C CIA.1; Longitudinal wave.

Immersion method. Focused transducer.

- -

Long-term strength As per AIR 9183 (21.11.1996). Test temperature, 25°C;

Loading, 116 hbar. Long strength, h. 5.

air cooling

2 h

700°

Bottom

993

AIR 9183 (21.11.1996)

hbar

hbar

%

%

min

88-

113

min

10

25

Longitudinal

11

89,1

101,7

16,8

45,4

46,4

11

93,0

101,7

16,8

45,4

46,4

Prepared by

Dushina A.A.

Name

Dushina A.A.

signature

SABRe



stamp 13

VSMPO

QA 32

TIRUS



"VSMPO-AVISMA Corporation"

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**INSPECTION
CERTIFICATE**

EN 10204-3.1 AS 9100EN ISO 9001 CERT. № 01 117 048312

ANNEX 1 TO CERTIFICATE 24696Y11C

Requirement:	0,20% proof stress	Tensile strength	Elongation	Reduction	Heat treatment	Requirement:	Hardness
	Mpa	Mpa	%	%	T°, C	time	HBW
MSRR 8652 is.16 WL 3.7164. Part.2 BS 37A 11:2009	830	900-1160	10-25		(21.11.1996)	AIR 9183	272-352
	11 878 203	961 984	17,9 16,1	44,6 42,2	700° air cooling	2 h	11 63 102 131 153 203



Requirement:	Impact strength KCV actual
AIR 9183 (21.11.1996)	Longitudinal 11 35,31

Prepared by Dushina A.A.
Name Dushina A.A.
signature



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