

6265.2



VSMPO-AVISMA Corporation
Cert 02107Y15

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**INSPECTION
CERTIFICATE**



Contract: 94054108TNG Annex 25
Purchaser order: 14-0013044/30285-RM

Date: 16.02.2015
Condition of delivery: Hot Rolled, Annealed, Machined Ground, Pickled.

CERTIFICATE: 02107Y15
Purchaser: Tirus International SA, Switzerland
Quality alloy: Ti-6Al-4V

Terms of delivery: AMS 4928U, AMS-T-9047A, AMS 6931C, ASTM B 348-13, ASTM B 361-13, ASTM F 1472-08
Bars # Units Weight, (kg) Object Dimensions (mm) or Drawing # Heat # Lot #
-126 558 Bar dia 19,05 x 3048-3658 0-24-13280 913-1

Chemical Composition, % Ti-remainder
Requirement: AMS 4928U, AMS-T-9047A, AMS 6931C, ASTM B 348-13, ASTM F 1472-08, ASTM B 348-13

	Al		V		Fe		O		C		N		Y		Residuals, %		
	max	min	max	min	max	min	max	min	max	min	max	min	max	min	total	each	
TOP	6.75	5.5	4.5	3.5	0.30	0.20	0.08	0.05	0.019	0.018	0.004	0.004	0.0010	0.005	0.40	0.10	max
BOTTOM	6.37	5.27	4.29	3.25	0.25	0.178	0.019	0.018	0.018	0.018	0.004	0.004	0.0010	0.005	0.171	0.10	max

Requirements:
0.20% proof stress: 862 MPa
Tensile strength: 931 MPa
Elongation: 10%
Reduction: 25%
Heat treatment conditions: 730° air cooling
Time: 1 h
Beta-transus: 1013
T, °C: 1018
1/2R actual

Microstructure testing: As per AMS 6831C par. 3.5.1.4, AMS 4928U par. 3.6, AMS-T-9047A par. 3.9; AMS 6931C, AMS 4928U par. 3.5.1.2, 3.5.1.3; AMS-T-9047A par. 3.6, 3.9, ASTM F 1472-08 par. 9.1, 9.3
Free from alpha-case.
Ultrasonic inspection: As per AMS-TD-2154A CL. A. Longitudinal wave. Type I
AMS 2631D CL. A1. Longitudinal wave. Immersion method.
Focused transducer.

	0.20% proof stress		Tensile strength		Elongation		Reduction		Heat treatment conditions		Time		Beta-transus		T, °C	
	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
1-1	952	862	1023	1006	19.6	21.2	51.9	50.7	730°	air cooling	1 h	Top	1013	1018	1013	1018
2-1	925	862	1006	1019	21.2	20.0	50.7	53.7	730°	air cooling	1 h	Bottom	1013	1018	1013	1018
5-2	950	862	1019	1019	20.0	21.7	53.7	54.5	730°	air cooling	1 h	Top	1013	1018	1013	1018
6-2	947	862	1067	1019	21.7	21.7	54.5	54.5	730°	air cooling	1 h	Bottom	1013	1018	1013	1018

Ingot: 2 VAR

Approved by: Mitrokhina O.K. Signature: *Mitrokhina O.K.*
Stamp:

Production start-up date: 22.01.2015
Melting date: 19.01.2015
Nominal diameter after rolling: 21 mm.
Radiation free. Mercury free.
Warning: In every respect with the above particular specifications, dimensions, and material determine and regulate in force.
Information published in this inspection certificate is valid only for the purpose of certification.
The only this subject to exceptions of constitutive final inspection, the supplier declares that all manufactured in accordance with the technical specifications of the contract, copy of sub-order and that, all impurities, imperfections and faults, having been completed, the samples normally in every respect with the above particular specifications, dimensions, and material determine and regulate in force.
AMS 4928U, ASTM B 348-13
AMS 6931C, AMS-T-9047A
ASTM B 361-13, ASTM F 1472-08

VSMPO
VSMPO-Titus, US
Pittsburgh, PA

INSPECTION REPORT

Form# V056
Rev. 1
3 Jan 2011

Alloy:	VSMPO P.O.#:	Inspected By:	Date:
Form:	Length Tol:	QA Approval:	Date:
Size :	Width / Ø Tol:	Thickness (Ø) Tol:	Invoice #:
6-4	30288-RM	BRK	8-27-15
Bar		RWJF	9/3/15
.750"	+ .005" / -.003"		756 1574

Package#	Heat #	Qty	ID #	Test ID	1/Ø 1	1/Ø 2	Width	Length	ART
324647	0-23-13587	144		22	.751	.751		130 3/4	A
				22	.751	.751		142 3/4	A
				20	.751	.751		136 1/4	A
				20	.752	.752		142 3/4	A
				14	.752	.752		131 1/8	A
				23	.752	.752		134 1/4	A
				23	.752	.752		142 1/4	A
				18-1	.750	.750		131 5/8	A
				18	.752	.752		131 1/2	A
				19	.751	.751		127 7/8	A
		126		1	.753	.753		141 1/2	A
324542	0-24-13280			1	.752	.752		138 7/8	A
				1	.753	.752		139 5/8	A
				4	.753	.752		134 5/8	A
				1	.752	.751		133	A
				3	.753	.752		138 1/4	A
				1	.753	.753		125 1/8	A
				42	.752	.752		133 1/2	A
				5	.752	.753		136 7/8	A
					.753	.753		142 3/4	A

Stencil Markings:	Tool ID:
AMS 4928 U AMS 69312 AMS-T-9047 ASTM B 348-13 ASTM B 381-13	DMIC-7
Visual Inspection:	Tool ID:
ASTM F1472-08E1 HIT# JFL6ALGVZ US-MPO	T-M-20

OK