



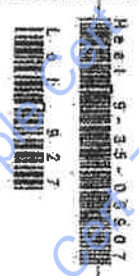
VSMPO-AVISMA Corporation



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INSPECTION CERTIFICATE

EN 12045-1 AS PRACTICE ISO 9001 CERT. No. 01 117 042/12



CERTIFICATE: 22614Y14

Purchaser: TMS International SA, Switzerland

Quality/lot: T1-6A1-4V

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

Terms of delivery: AMS 4928U, AMS-T-9047A, AMS 6931C, ASTM B 348-13, ASTM B 381-13, ASTM F 1472-08

Bars # Units Weight, (kg)

378 1094

Object Bar

Dimensions (mm) or Drawing #

dia 15,875 x 3048-3658

Heat #

6-35-06907

Lot #

927

Contract: 840641081NG Annex 26

Purchaser order: 14-001304/130287 RM

Requirement	Ti-remainder				Residuals, %	in the Part, %
	Al	V	Fe	O		
AMS 4928U, AMS-T-9047A, AMS 6931C, ASTM B 381-13, ASTM F 1472-08 ¹ , ASTM B 348-13	max 5.50	max 3.50	max 0.30	max 0.20	each	total
	6.75	4.50	0.30	0.08	max 0.10	max 0.40
	6.35	4.13	0.18	0.180	max 0.10	max 0.083
	6.22	4.11	0.15	0.177	max 0.10	max 0.078
					1-4	0.0023
					1-4	0.0030

Requirement	0.20% proof stress		Tensile strength		Elongation		Reduction		Heat Treatment conditions		Beta-transus T, °C
	MPa	MPa	MPa	MPa	%	%	%	%	T, °C	Time	
AMS 4928U, ASTM B 348-13	min 959	min 1034	min 978	min 1057	min 17.9	min 50.6	min 51.8	min 730°	min 1 h	min 1013	min Top
AMS 6931C, AMS-T-9047A	min 955	min 1032	min 945	min 1033	min 20.0	min 52.0	min 51.5	min air cooling	min 1088	min Bottom	min 1088
ASTM B 381-13, ASTM F 1472-08 ¹	min 967	min 1031	min 966	min 1043	min 18.8	min 50.4	min 50.2	min	min	min	min
	min 952	min 1039	min 952	min 1039	min 20.0	min 52.7	min 52.1	min	min	min	min
	min 988	min 1038	min	min	min	min	min	min	min	min	min

Macrostructure testing: As per AMS 6931C per 3.5.1.4, AMS 4928U per 3.6, AMS-T-9047A per 3.9; Microstructure testing: As per AMS 6931C, AMS 4928U per 3.5.1.2.2, 3.5.1.3; AMS-T-9047A per 3.6, 3.9, ASTM F 1472-08¹ par. 9.1.9.3

Free from alpha-case; Ultrasonic inspection: As per AMS-STD-2154A CL A, Longitudinal wave, Immersion method; Focused transducer

Radiation free, Mercury free
Nominal diameter after rolling 19 mm

Approved by Alexeeva O.M.

Signature *[Handwritten]*



6264.3



VSMPO, Trus, US
Pittsburgh, PA

INSPECTION REPORT

Form# V036
Rev. 1
3 Jan 2011

Alloy:	6-4	VSMPO P.O.#:	30287-RM	Inspected By:		Date:	8-31-15
Form:	Bar	Length Tol:		QA Approval:	AK	Date:	9/23/15
Size:	0.625"	Width / 2 Tol:	+ .005" / -.003"	Thickness (A Tol):	AK	Invoice #:	756 1527

Package#	Heat#	Qty	ID #	Test ID	1/0-1	1/0-2	Width	Length	A/R
308552	9-35-06907	189		3	.027	.027		123 1/2	A
				3	.027	.027		128 3/8	A
				4	.028	.027		129 1/4	A
				5	.026	.026		142 1/8	A
				11	.027	.027		120	A
				14	.028	.028		137 1/8	A
				9	.028	.028		123	A
				12	.027	.026		139 1/4	A
				1	.028	.027		132 1/8	A
				13	.028	.028		123	A

Stencil Markings:
AMS 4928 VAMS 0931 t AMS-T-9047 AASTM B 348-13 ASTM B
Visual Inspection:
381-13 ASTM F1472-08 e1 HTF TFL6AL4VI VSMPO

Tool ID: 0m: e-7
Tool ID: Tm: 20

OK



VSMPO-Titus, US
Pittsburgh, PA

INSPECTION REPORT

Form# V086
Rev. 1
3 Jan 2011

Alloy:	6-4	VSMPO P.O.#:	30287-RM	Inspected By:	AMM	Date:	8-31-15
Form:	Bar	Length Tol:		QA Approval:		Date:	9/3/15
Size:	0.625"	Width / Ø Tol:	+ .005" / -.003"	Thickness / Ø Tol:		Invoice #:	756 1527

Packages#	Heat #	ID #	Test ID	1/Ø 1	1/Ø 2	Width	Length	AR
308553	9-35-06907	189	7	.627	.627		12946	A
			8	.628	.628		12838	A
			13	.627	.627		12476	A
			11	.627	.627		12558	A
			8	.628	.628		12316	A
			8	.626	.626		143	A
			4	.628	.628		12778	A
			7	.628	.627		12576	A
			13	.628	.627		12512	A
				.628	.627		12358	A

Stencill Markings:
 AMS 4928 UAMS 6931C AMS-T-9047 A ASTM B 348-13 ASTM B 3813
 Visual Inspection:
 ASTM F1472-08 01 HT# TP6AL4VT VSMPO

OK

Tool ID: Dm: c-7
Tool ID: TM-20