



"VSMPO-AVISMA Corporation"

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

# INSPECTION CERTIFICATE

**CERTIFICATE № 13853Y11A**  
Purchaser: Tinus International SA, Switzerland  
Quality/alloy: GRADE2 Condition of delivery: Hot Rolled, Machined, Annealed.

Date: 31.08.2011

Contract: 84054105TDD Annex 13

Purchaser order: 26483-RM  
Terms of delivery: ASTM F 67-06



Item No	Units	Weight, (kg)	Object	Dimensions (mm) or Drawing №	Heat №	Lot №
	170	857	Pickled BAR	dia 19,05 <sup>+0,20</sup> x 3658-4267	8-33-07052	988

Requirement	Chemical Composition, %				Residuals, max, %	In the Part, Samples as-pickled	H (%)
	O	Fe	C	N			
ASTM B 348-13 Gr.2	max 0,25	max 0,30	max 0,08	max 0,03			
ASTM F 67-06				max 0,010			
TOP	0,141	0,032	0,005	0,002			
BOTTOM	0,160	0,033	0,005	0,002			91-2 0,003

Requirement	0,20% proof stress		Tensile strength		Elongation		Reduction		Beta-transus		Heat treatment	
	MPa	min	MPa	min	%	min	%	min	T°, C	T°, C	time	
ASTM B 348-13 Gr.2												
ASTM F 67-06		275		345		20		30				
	42-1	342	469	473	27,6	66,8				650	1 h	
	91-2	332			30,8	66,5				air cooling		

Macrostructure testing N/A  
Microstructure testing As per ASTM F 67-06 par.9.1:  
(free from alpha-case).  
Ultrasonic inspection N/A

We certify that, subject to exceptions or concessions listed hereafter, the supplies detailed here were manufactured in accordance with the technical specifications of the contract, order or sub-order and that, all inspections operations and tests, having been completed, the supplies comply in every respect with the relevant particular specifications, drawings, and relevant standards and regulations in force. Information particular to the supplies delivered, specify the reference of concessions granted.

Bar Heat Treatment 650° C, 1 h, air cooling.  
Mercury Free.  
Production start-up date: 06.08.2011  
Diameter tolerance ASTM B 348-10(±0,20 mm)

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

signature

stamp

