



Verkhinaya Saldta

Metallurgical Production Association

1, Parkovaya St., Verkhinaya Saldta, Sverdlovsk reg.,

624 600, RUSSIA

Phone (34345) 2-38-32, 2-17-66

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Telex 348176, 348177 SEVER

EN 10264-1E ISO 9002 CERT. No. 100 92260

ANNEX TO
INSPECTION
CERTIFICATE



ANNEX 1 CERTIFICATE 02086Y04A

Purchaser: **YSMPO, TIROS, USA**
Quantity of Bars: **277**

Quantity of Samples: **277**
Product: **Bar**

Heat: **8-46-3295**
Lot: **608-1**

Requirement: **C50TF22-S17 Cl.C par. 3.1 (Cl.A)**

Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	Bar #	
71	85	96-1	109-6	124	136	148-5	163	178	189-4	202	217	229-3	238-8							
72	86	99-2	109-7	125	139-1	149-6	164	179	189-5	203	218	229-4	238-9							
73	87	99-3	111	126	139-2	149-7	165	179-1	189-6	204	219	229-5	239-10							
74	88	99-4	112	127	139-3	151	166	179-2	189-7	205	219-1	229-6	239-11							
75	89	99-5	113	128	139-4	152	167	179-3	189-8	206	219-2	229-7								
76	89-1	99-6	114	129	139-5	153	168	179-4	189-9	207	219-3	229-8								
77	89-2	99-7	115	129-1	139-6	154	169	179-5	189-10	208	219-4	229-9								
78	89-3	101	116	129-2	139-7	155	170	179-6	189-11	209	219-5	232								
79	89-4	102	117	129-3	141	156	170-1	179-7	189-12	209-1	219-6	234								
79-1	89-5	103	118	129-4	142	157	170-2	181	189-13	209-2	219-7	235								
79-2	89-6	104	119	129-5	143	158	170-3	182	189-14	209-3	221	236								
79-3	89-7	105	119-1	129-6	144	159	170-4	183	189-15	209-4	222	237								
79-4	91	106	119-2	129-7	145	159-1	171	184	189-16	209-5	223	238								
79-5	92	107	119-3	131	146	159-2	172	185	189-17	209-6	224	239								
79-6	93	108	119-4	132	147	159-3	173	186	189-18	209-7	225	239-1								
79-7	94	109	119-5	133	148	159-4	174	187	189-19	211	226	239-2								
79-8	95	109-1	119-6	134	149	159-5	175	188	189-20	212	227	239-3								
81	96	109-2	119-7	135	149-1	159-6	174	189	189-21	213	228	239-4								
82	97	109-3	121	136	149-2	159-7	175	189-1	189-22	214	229	239-5								
83	98	109-4	122	137	149-3	161	176	189-2	189-23	216	229-1	239-6								
84	99	109-5	123	138	149-4	162	177	189-3	201	216	229-2	239-7								

Notes:

- Total quantity of bars: **277**
- Bars excluded from the lot: **N/A**
Nonconformance/ Bar #:
- Bar length min 2440 mm: **73,74,75,239-2,239-3**

4. Bars excluded from the lot due to US-results: **N/A**

Weight: **kg**

Internal Defects:

Surface Defects:

Prepared by: **Dushina A.A.**
Name: **Dushina A.A.**

Signature: _____

Stamp: _____



Original Cert #
02080404A

CERTIFICATE OF REPORT NF & M INTERNATIONAL, INCORPORATED

1729 PENNSYLVANIA AVENUE, MONACA, PENNSYLVANIA 15061 Ph. 724-774-9200/FAX 724-728-2544

Customer:

VSMPO - TIRUS, US - LEETSDALE
401 RIVERPORT DRIVE
LEETSDALE PA 15056
ATTN: ACCOUNTS PAYABLE

Ship To:

VSMPO - TIRUS PA WAREHOUSE
401 RIVERPORT DRIVE
LEETSDALE PA 15056
ATTN: CHRIS CHMURA

NF&M Work Order 09883	Ingot No. 8-46-3295	Size .750 In RND	Customer P.O. 29463-NI
NF&M Sales Order OC3686-00	Material Titanium 6-4	Description ANNEALED BAR	Report Date 11/14/2013

SPECIFICATIONS: AMS4928T, ASTM B348-13

PRODUCT CHEMISTRY

Sample	75	81	
Hydrogen (ppm) surface	13	10	Hot extraction method.

TENSILE PROPERTIES (HEAT TREAT ID 1) (FULL SECTION PROPERTIES)

Sample/Dir	112/L	72/L
Ultimate (KSI)	143	144
Yield (KSI) (0.2% offset)	132	135
4D Elongation (%)	18	18
Reduction (%)	51	51

HEAT TREATMENT

Type: VACUUM ANNEALED
1) Temp (F): 1300 Duration (Hrs): 1.25 Argon Quenched
Performed at Solar Atmospheres Inc.; 30 Industrial Road; Hermitage, PA 16148

MACRO

Acceptable to AMS2380 REV. F, LEVEL 10

MICRO

Acceptable to AMS4928T Para 3.5.1.2.1 (L)

REMARKS

Material conforms to the requirements of this purchase order.
ALLOY TYPE TESTING - OK
No Alpha Case present
All properties performed at room temperature unless specified otherwise.
All testing performed at NF&M INTERNATIONAL unless specified otherwise
Material supplied or processed on this purchase order has not come in direct contact with mercury or it's compounds nor with any mercury containing device employing a single boundary of containment

SHIPPING DATA

Weight: 2606#

QUALITY CONTROL

Jeffrey Keefer
JEFFREY KEEFER, LAB TECHNICIAN CLASS 2



THE RECORDING OF FALSE, FICTITIOUS, OR FRAUDULENT STATEMENTS OR ENTRIES ON THE CERTIFICATE MAY BE PUNISHABLE AS A FELONY UNDER FEDERAL LAW.

THE TEST REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT WRITTEN APPROVAL OF NF&M QUALITY.



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Telex 348176, 348177 "SEVER"

INSPECTION CERTIFICATE

EN 10204-3.1, B ISO 9002 CERT. No 08 100 55266



date: 06/03/2004

CERTIFICATE No: 02086Y04A

Purchaser: VSMPO TRUS U.S.A.

Quality/alloy: T6341V Condition of delivery: Hot Rolled, Machined & Pickled.

Contact: 84021101TMV Annex 1

Purchaser order: 11542

Terms of delivery: C50TF22-S17 Cl.C par. 3.1 (CIA)

GE S.470 01/06/2009, GE S 1000 01/02/2008, AMS 2241R

Item No	Units	Weight, (kg/LB)	Object	Dimensions (mm/inch) or Drawing	Heat No	Lot No
	277	1185/26125	BAR	dia 19.05 X 3050 - 3850/70.750X120-143.7	8-46-3295	608-1
				min dia 18.99; max dia 19.12		

Requirement	Chemical Composition, %										Residuals, %	In the Part, %							
	Al	Mn	Mo	V	Zr	Cu	Sn	C	Fe	Y			B	O ₂	N ₂	H ₂	each	total	sample
C50TF22-S17 Cl.C	5.50-6.75	max	max	3.50-4.50	max	max	max	max	max	max	max	max	max	max	max	max	max	max	max
TOP	8.32	0.003	0.018	3.83	0.020	0.006	0.005	0.003	0.071	0.0001	<0.0014	0.194	0.008	0.0014	<0.10	0.058		72	0.0015
BOTTOM	8.48	0.004	0.018	4.03	0.020	0.008	0.005	0.003	0.074	0.0001	<0.0014	0.170	0.008	0.0016	<0.10	0.063		239-10	0.0024

Requirement	0.20% proof stress		Tensile strength		Elonga-tion		Reduc-tion	Sample #	Beta-transus T _β , F	Heat treatment T _β , F	time
	MPa	MPa	min	MPa	min	%					
C50TF22-S17 Cl.C	827	886	min	min	10		min				
	71	904	984	16.5	50.3	TOP	1801.4	1299	2h		
	72	908	982	16.5	52.2	BOTTOM	1819.4	air	cooling		
	239-10	890	966	16.9	53.2						
	239-11	883	961	16.7	53.5						

Ingot triple VAR, dia 745 mm weight 32.10 kg/ 70.77 pounds.

Prepared by: Dushina A.A. signature

Name: Dushina A.A.

Stamp:

100% analysis for alloy compliance, no burnt areas.

GRP