



DYNAMET
A Carpenter Company

195 Museum Road
Washington, PA 15301
Phone 724.228.1000
Fax 724.229.4195

PRODUCT CERTIFICATION

WORK ORDER
523573

SALES ORDER / RLS
068590 / 001

SHIP TO

Performance Titanium Group
8400 Miramar Rd
Suite # 200-248C
San Diego, CA 92126
USA

CUSTOMER P.O. PTG60625 ✓	CUSTOMER PART 121DD2GBD03750	QUANTITY LADING NO ✓ 645 lbs 00101739	SHIPMENT DATE 07/02/2019
PART INFORMATION 121DD2GBD03750 ✓ TI 6AL 4V ELI CG Bar - 0.375" Dia. ✓ Specifications: ASTM F 136 Rev: 13; ASTM B 348 Gr23 Rev: 13; ISO 5832-3 Rev: 2016; AMS 6932 Rev: C; AMS 4930 Rev: J; EN 10204 3.1 Rev: 04; MIL-T-9047 Ti 6-4ELI Rev: G; AMS-T-9047 Ti 6-4Eli Rev: 03; S-400 Rev: 16; S-1000 Rev: 2017; AMS 4928 Rev: W; AMS 6931 Rev: D; ASTM B 348 Gr5 Rev: 13; ASTM F 1472 Rev: 14 ✓ Size: 0.375" Dia. +/- 0.0005" ✓ Length: 10' to 12' Random Length			
✓ Chemical Report (Wt.%)			
Heat 8R58476	Al T 6.15	Al B 5.98	C T .011
Fe T .18	Fe B .17	N T .005	N B .004
O T .13	O B .12	V T 3.92	V B 3.99
Y T <.0010	Y B <.0010	Ti BAL	Ot E <.10
TOE <.30			
✓ Hydrogen (As Shipped)			
Hydrogen (%) 0.0017			
✓ As Shipped Properties			
UTS #1 (psi) 156700	YS 0.2% #1 (psi) 142500	EL #1 (%) 12.0	RA #1 (%) 41.8
UTS #2 (psi) 156900	YS 0.2% #2 (psi) 142500	EL #2 (%) 12.6	RA #2 (%) 38.7
Hardness (HRC) 37			
✓ Metallography Results			
Macrostructure Acceptable Microstructure Alpha-Beta, Similar to Pub. ETTC 2 / ISO 20160 Plate: A1 Alpha Case Material Free of Alpha Case			

PTG
QA 1
Approved
7-10-19



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CUSTOMER P.O. PTG60625	CUSTOMER PART	QUANTITY LADING NO 645 lbs 00101739	SHIPMENT DATE 07/02/2019
Material Data			
Melt Origin USA		Bt Tr °F 1779	
Melt Source RTI Canton	Melt Type EB-VAR	Bt Tr °C 971	
Certification Information			
As Shipped Condition Annealed 1300°F 1 Hour A/C			
<p>CERTIFICATION REQUIREMENTS</p> <p>Material annealed in accordance with MIL-H-81200.</p> <p>Hydrogen analysis taken from final product.</p> <p>Material tested in 5D gage length.</p> <p>During manufacturing, handling, testing and inspection, this material did not come in direct contact with mercury or any device employing a single boundary of containment.</p> <p>Material furnished under this contract contain no metallic mercury or mercury compounds and are free of mercury contamination.</p> <p>Material has not been exposed to radioactive contamination.</p> <p>Material 100% ultrasonic inspected at finished diameter in accordance with AMS 2631E CL AA; #2 FBH - all accepted.</p> <p>Material is DRC conflict free.</p> <p>Material conforms to RoHS Directive 2011/65/EU.</p> <p>Material certified to the requirements of MIL-T-9047G Cond. A (Dated - 12/16/78), MIL-T-9047G Amendment 2 (Dated - 09/30/86), MIL-T-9047G Notice 1 (Dated - 2/8/93) and MIL-T-9047G Notice 2 (Dated - 4/4/98).</p> <p>No weld repair was performed on this product at Dynamet.</p> <p>Material conforms to the requirements of DFARS 252.225-7008 and 252.225-7009 (previously DFAR 252.225-7014 Alt.1 (Jan 2008, Deviation 2008-O0002)).</p> <p>Dynamet Inc has complied with all producer requirements of AS6279.</p> <p>Material certified in accordance with the requirements of EN 10204 3.1</p> <p>Complete copy of the original material chemistry attached.</p> <p>Mechanical properties, hydrogen analysis, and microstructure performed at Product Evaluation System. Nadcap & GE approved supplier code: T9377</p>			
End of Certification			
			 Ken Pike Authorized Quality Release Agent
			



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CUSTOMER P.O.	CUSTOMER PART	QUANTITY	LADING NO	SHIPMENT DATE
PTG60625		645 lbs	00101739	07/02/2019

This is to certify that the above test results are correct as contained in the records of the company.

Certification shall not be reproduced except in full without the approval of Dynamet Inc. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under Federal Law.

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RMI Titanium Company, LLC d/b/a RTI Niles
 A subsidiary of Arconic, Inc.
 Arconic Titanium and Engineered Products
 1000 Warren Ave.
 Niles, OH 44446

30271279 8R58476- 01- 00

Test Report

ORDER DETAILS

Customer: Dynamet Inc.
 195 Museum Road
 Washington, PA, 15301, USA
 Customer Order: 076336
 Customer Reference No: N/A
 SO Number: 360735
 Production Order Number: 30271279

SHIPPING DETAILS

Packing List: 80646858
 Size: 9.000in/228.6 mm RCS
 No. of Pieces: 8
 Piece ID's: B2A, T2A, T2B, B1B, B2B, T1A, B1A, T1B
 Weight (lbs): 19957 lbs/9,052 kg
 Test Piece: No
 Test Piece Qty: 0
 Customer Test Piece Size: N/A
 Test Piece ID: N/A
SPECIFICATIONS: DI 2121C, DI-1036C

Except as referenced in exception letter dtd 2-21-19

Exceptions: None
FPA'S: Dynamet #4B 10/25/10
MELTING ONLY FPA'S: Dynamet #3H 3/24/17

CONCESSIONS/ APPROVALS:

None

MATERIAL DETAILS

Alloy: TI 6-4 ELI ✓
 Melt Method: EB / VAR
 Final Melt Location: Canton, OH, USA ✓
 Final Melt Date: 8/13/2018
Heat-Lot-SR: 8R58476-01-00 ✓
 Material: Ground All Over RCS TI Bloom
 Ingot Diameter: 36in dia./914.4 mm dia.
 Sponge Source: Sitix

✓ Ingot Chemistry

Element	Top	Center	Center	Bottom	Bottom	Method	Limits
O (%)	0.13		0.13		0.12	ASTM E1409-13	0.09 min, 0.13 max
N (%)	0.005		0.003		0.004	ASTM E1409-13	0.015 max
C (%)	0.011	0.014		0.016		ASTM E1941-10	0.05 max
Fe (%)	0.18	0.18		0.17		ASTM E2994-16	0.10 min, 0.25 max
Al (%)	6.15	6.22		5.98		ASTM E2994-16	5.75 min, 6.30 max
V (%)	3.92	3.99		3.99		ASTM E2994-16	3.50 min, 4.50 max
Cu (%)	0.002	0.002		0.002		ASTM E2994-16	0.100 max
Si (%)	0.013	0.013		0.012		ASTM E2994-16	0.100 max
Ni (%)	0.013	0.013		0.011		ASTM E2994-16	—
B (ppm)	<10	<10		<10		ASTM E2994-16	50 max
Y (ppm)	<10	<10		<10		ASTM E2994-16	50 max
Residual Elements, Each (%)	<0.10	<0.10		<0.10		ASTM E2994-16	0.10 max
Residual Elements, Total (%)	<0.30	<0.30		<0.30		ASTM E2994-16	0.30 max
Ti	BAL.	BAL.		BAL.		ASTM E2994-16	—
Beta Transus Calculated (F)	1778	1785		1779		ASTM E2994-16	1750 min

PTG
 QA 1
 Approved
 7-10-19



RMI Titanium Company, LLC d/b/a RTI Niles
 A subsidiary of Arconic, Inc.
 Arconic Titanium and Engineered Products
 1000 Warren Ave.
 Niles, OH 44446

30271279 8R58476- 01- 00

Test Report

Product Chemistry

Element	T1A MR	B1A MR	Method	Limits
H (ppm)	2	2	ASTM E1447-09	50 max

Product Chemistry

Element	T1A 1/4" below	T1A 1/4" below	B1A 1/4" below	Method	Limits
H (ppm)	29	26	28	ASTM E1447-09	50 max

Product Chemistry

Element	B1A 1/4" below	Method	Limits
H (ppm)	32	ASTM E1447-09	50 max

Certification Statements

Material has no weld repair.

✓ Material is free of mercury, radium, luminous or alpha source materials.

Unless stated otherwise, all testing performed at RTI Niles, Niles, OH, USA

Material is free of radium, alpha source, low melting, alloy contamination.

RTI certifies that all processing is free of radioactive contamination.

Bill Colletta

Bill Colletta

Date: 3/1/2019

PTG
QA 1
Approved



ALPA CENTERLESS PRODUCTS, INC

12236 McCann Dr.
Santa Fe Springs, CA 90670

Packing Slip

Date	Invoice #
9/18/2019	23250

Ship To
Performance Titanium Group 8025 Silverton Ave San Diego, CA 92126

P.O. No.	Ship	Via	FOB	Project
PTG61719 ✓		W/C	OUR PLANT	

Quantity	Item Code	Description
4	BAR GRIND FROM	6-4 ELI TI HT#H24773 .1875" DIA TO .15748" DIA
4	BAR GRIND FROM	6-4 ELI TI HT#8V58794 .250" DIA TO .19685" DIA
✓ 6	BAR GRIND FROM TOLERANCE	✓ 6-4 ELI TI HT#8R58476 ✓ .375" DIA TO .31496" DIA ✓ +/- .0005" ✓ Sales Tax

RECEIVED BY: _____ DATE: _____

Phone #	Fax #
562-946-5200	562-946-5600

PTG
QA 4
Approved
9-30-19