



DYNAMET
A Carpenter Company

195 Museum Road
Washington, PA 15301
Phone 724.228.1000
Fax 724.229.4195

PRODUCT CERTIFICATION

WORK ORDER
510614

SALES ORDER / RLS
065532 / 008

SHIP TO

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

CUSTOMER P.O. PTG59543 ✓	CUSTOMER PART	QUANTITY	LADING NO	SHIPMENT DATE						
		✓ 199 lbs	00092292	03/15/2018						
PART INFORMATION 121DD2LBM01875										
TI 6AL 4V ELI CG Bar - 0.1875" Dia. ✓										
Specifications: ASTM F 136 Rev: 13; ASTM F 1472 Rev: 14; ASTM B 348 Gr5 Rev: 13; ISO 5832-3 Rev: 2016 ✓										
Size: 0.1875" Dia. +/- 0.0005"										
Length: 10' to 12' Random Length										
Chemical Report (Wt.%) ✓										
Heat	Al T	Al B	C T	C B	Fe T	Fe B	N T	N B	O T	O B
H24773	6.04	6.06	.037	.033	.17	.16	.004	.004	.10	.10
V T	V B	Y T	Y B	Ti	Ot E	TOE				
4.11	4.12	<.0004	<.0004	BAL	<.10	<.30				
Hydrogen (As Shipped) ✓										
Hydrogen (%)										
0.0039										
As Shipped Properties ✓										
UTS #1 (psi)	YS 0.2% #1 (psi)	EL #1 (%)	RA #1 (%)							
149400	133300	18	56							
Hardness (HRC)										
33										
Metallography Results ✓										
Microstructure										
Alpha-Beta Similar to ISO 20160 Plate: A2										
Alpha Case										
Material Free of Alpha Case										
Material Data ✓										
Melt Origin	Bt Tr °F									
USA	1781									
Melt Source	Bt Tr °C									
TIMET	972									

PTG
QA 1
Approved
3-16-18



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PTG59543		199 lbs	00092292	03/15/2018

Certification Information

As Shipped Condition

Annealed 1300°F 1 Hour A/C

CERTIFICATION REQUIREMENTS

- Hydrogen analysis from final product.
- Material tested in 5D gage length.
- Material free of mercury and radioactive contamination.
- Manufacturing process did not subject annealed material to temperatures in excess of 1622°F.
- Material 100% eddy current tested at finished diameter - All accepted.
- Complete copy of the original material chemistry attached.

Scott R. Gallagher
Authorized Quality Release Agent

End of Certification

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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QA 1
Approved



Titanium Metals Corporation

Approved Certificate

181 N. Water Street, Black Mountain Industrial Park Gate 3
Henderson, NV, 89015
Telephone (702) 564-2544, Fax (702) 566-4494

CERT ID
H24773
01-OCT-2015 23:02:15 GMT

PURCHASE ORDER
059539

SOLD TO CUSTOMER
Dynamet Inc
195 Museum Road, Washington, PA 15301

HEAT NUMBER
H24773 ✓

GRADE
TIMETAL®6-4 ELI ✓

SHIP TO ADDRESS
Carpenter Premium Products
22110 Thomas L Hammons Road, Tanner, AL 35671

PRODUCT DESCRIPTION

34" SQ 3-VAR INGOT
INGOT - LENGTH: 108" WEIGHT: 14720 lbs

DELIVERY CONDITION

As-Cast

Specifications

This material complies with the chemistry, melting/processing and quality requirements (as applicable) of the following specifications:

- AMS 4930 H
- AS6279 Org
- ASTM F 136 -13
- DI-2121 B

FPA-DYN-SQ Rev 1 Material manufactured in accordance with TIMET-Henderson/ Dynamet Vendor Approved Process.

Release Statements

1. Material released against Line Item 1 of the Purchase Order.
2. TIMET-Henderson has complied with all producer requirements of AS6279.

<i>Melt Method</i>	<i>Melt Date</i>	<i>Melt Country of Origin</i>	<i>Melt Location</i>
3-VAR	28-SEP-2015	US	TIMET - Henderson, NV, USA ✓

Compliance Statements

1. Material conforms to the full requirements of the order and the raw materials used have been obtained from approved sources.
2. The acceptability of meeting the requirements defined in the applicable listed specification(s) are contingent upon appropriate thermo-mechanical processing.
3. ✓ During the manufacturing process, this material has not come in contact with mercury or radioactive luminescent materials; as such, it is certified to be free of mercury and radioactivity.
4. Ingot manufactured with TIMET-Henderson VDP sponge.

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QA 1
Approved
3-16-18

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059539

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Dynamet Inc
195 Museum Road, Washington, PA 15301

Ingot Chemical Analysis
(Weight percent)

Unless otherwise noted, Ingot Chemical Analysis performed at Henderson Process Lab, 181 N. Water Street, Henderson, NV, 89015, USA

	Sn	Mo	Zr	Cu	Fe	Mn	V	Si	Al
Sample ID									
TOP	0.010	0.001	<0.001	<0.001	0.17	<0.001	4.11	0.014	6.04
BOTTOM	0.010	0.001	<0.001	<0.001	0.16	<0.001	4.12	0.012	6.06
	C	O	N	Ni	Cr	B	Y	BT	
Sample ID									
TOP	0.037	0.10	0.004	0.0024	0.004	<0.0010	<0.0004	1781	
BOTTOM	0.033	0.10	0.004	0.0021	0.004	<0.0010	<0.0004	1780	

Chemistry Statements

1. Residual elements: < 0.10% each, < 0.30% total.
2. Balance Titanium.
3. BT (Beta Transus) is a calculated value and reported in degrees F.
4. Carbon determined by combustion per ASTM E1941.
5. Metallics determined by Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES) per ASTM E2371.
6. Oxygen and Nitrogen determined by inert gas fusion per ASTM E1409.
7. Ingot hydrogen not reported. Approval for the elimination of ingot hydrogen analysis/reporting granted by Dynamet on 18-MAR-2015.

Results are from TIMET Quality Control Records on file
Sales Order # 448719 Item # 10
v.1

Digitally signed by Julian Duerr
DN: c=US, st=NV, l=Henderson,
ou=Quality Assurance,
email=Julian.Duerr@Timet.com,
o=Titanium Metals Corp
TIMET cn=Julian Duerr
Date: 2015.10.01 16:08:51
-07'00'

J. E. Duerr - Quality Engineer

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QA 1
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First in Titanium Worldwide



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

RECEIVED BY: _____ DATE: _____

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

PTG
QA 4
Approved
9-30-19