



195 Museum Road
Washington, PA 15301
Phone 724.228.1000
Fax 724.229.4195

PRODUCT CERTIFICATION

WORK ORDER
522976

SALES ORDER / RLS
068415 / 001

SHIP TO

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

CUSTOMER P.O. PTG60575 ✓	CUSTOMER PART 121DD2JDU01560	QUANTITY LADING NO ✓ 266 lbs 00101263	SHIPMENT DATE 06/11/2019							
PART INFORMATION 121DD2JDU01560 ✓ TI 6AL 4V ELI CG Bar - 0.1560" 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; BS 7252 Rev: 1997; 3.7165 Rev: 293; EN 10204 3.1 Rev: 04; MIL-T-9047 Ti 6-4ELI Rev: G; AMS-T-9047 Rev: 03; S-1000 Rev: 2017; S-400 Rev: 16; AS6279 Rev: A; ASTM B 348 Gr5 Rev: 13; AMS 4928 Rev: W; AMS 6931 Rev: D; ASTM F 1472 Rev: 14 ✓ Size: 0.1560" Dia. +/- 0.0005" ✓ Length: 10' to 12' Random Lengths										
✓ Chemical Report (Wt.%)										
Heat	Al T	Al B	C T	C B	Fe T	Fe B	N T	N B	O T	O B
H31746	6.06	6.12	.032	.030	.17	.16	.003	.004	.12	.12
V T	V B	Y T	Y B	Ti	Ot E	TOE				
4.06	4.05	<.0004	<.0004	BAL	<.10	<.30				
✓ Hydrogen (As Shipped)										
Hydrogen (%)										
0.0038										
✓ As Shipped Properties										
UTS #1 (psi)		YS 0.2% #1 (psi)		EL #1 (%)		RA #1 (%)				
155000		133000		11		38				
UTS #2 (psi)		YS 0.2% #2 (psi)		EL #2 (%)		RA #2 (%)				
156000		135000		12		42				
Hardness (HRC)										
30										
✓ Metallography Results										
Macrostructure										
Acceptable										
Microstructure										
Alpha-Beta, Similar to Pub. ETTC 2 / ISO 20160 Plate: A1										
Alpha Case										

PTG
QA 1
Approved
u-11-19



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CUSTOMER P.O. PTG60575	CUSTOMER PART	QUANTITY 266	LADING NO lbs 00101263	SHIPMENT DATE 06/11/2019
Material Free of Alpha Case				
Material Data				
Melt Origin USA		Bt Tr °F 1786		
Melt Source TIMET	Melt Type 3XVAR	Bt Tr °C 974		
Certification Information				
As Shipped Condition				
✓ Annealed 1300°F 2 Hours A/C				
CERTIFICATION REQUIREMENTS				
✓ Macrostructure and microstructure meet all requirements of MIL-T-9047.				
✓ Material annealed in accordance with MIL-H-81200.				
✓ Material tested in 5D gage length.				
✓ Hydrogen analysis from final product.				
✓ Material eddy current inspected at the finished diameter - All Accepted.				
✓ Material furnished under this contract contain no metallic mercury or mercury compounds and are free of mercury contamination.				
✓ Material free of radioactive material.				
✓ Material certified to the requirements of MIL-T-9047G Cond.A (Dated - 12/15/78), 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).				
✓ Material DRC Conflict free.				
✓ 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)).				
✓ Dynamet Inc has complied with all producer requirements of AS6279.				
✓ Hydrogen analysis performed at Carpenter Powder Products. Nadcap & GE approved supplier Code 90661.				
✓ Material was tested at Dynamet Material Laboratory G.E. supplier code T3114.				
✓ Mill Test report certified in accordance with EN 10204 3.1.				
End of Certification				
 Ken Pike Authorized Quality Release Agent				
PTG QA 1 Approved				



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

CUSTOMER P.O.	CUSTOMER PART	QUANTITY LADING NO	SHIPMENT DATE
PTG60575		266 lbs 00101263	06/11/2019
<p>This is to certify that the above test results are correct as contained in the records of the company.</p> <p>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.</p> <div data-bbox="1177 1669 1361 1822" data-label="Text"> <p>PTG QA 1 Approved</p> </div>			



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

H31746
10-FEB-2019 17:21:38 GMT

SOLD TO CUSTOMER

Dynamet Inc
195 Museum Road, Washington, PA 15301

PURCHASE ORDER 073495

HEAT NUMBER

H31746 ✓

GRADE

TIMETAL®6-4 ELI ✓

SHIP TO ADDRESS

Latrobe Steel Company
2626 Ligonier Street, Latrobe, PA 15650

PRODUCT DESCRIPTION

34" SQ 3-VAR INGOT
INGOT - LENGTH: 107" WEIGHT: 14630 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 J
- AS6279 A
- ASTM F 136 -13
- DI-1036 C
- DI-2121 B
- DI-2121 C
- FPA-DYN-SQ Rev 2

Release Statements

1. Material released against Line Item 001 of the Purchase Order.
2. TIMET-Henderson has complied with all producer requirements of AS6279.

Melt Method

3-VAR

Melt Date

07-FEB-2019

Melt Country of Origin

US

Melt Location

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.
5. Material complies with the specification of DI-2121 Rev. C with TIMET exceptions to apply. Acceptance of these exceptions granted by Dynamet (N. Cecchini) on 04-Jan-2019.

PTG
QA 1
Approved
6-11-19

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Dynamet Inc
195 Museum Road, Washington, PA 15301

PURCHASE ORDER 073495

✓ 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	0.014	<0.001	<0.001	0.002	0.17	<0.001	4.06	0.023	6.06
BOTTOM	0.015	<0.001	<0.001	0.002	0.16	<0.001	4.05	0.021	6.12
	C	O	N	Ni	Cr	B	Y	BT	
Sample ID									
TOP	0.032	0.12	0.003	0.0039	0.001	<0.0010	<0.0004	1786	
BOTTOM	0.030	0.12	0.004	0.0034	0.001	<0.0010	<0.0004	1786	

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 # 553569 Item # 10
v.1



Digitally signed by Carl Adams
DN: c=US, st=NV, l=Henderson,
ou=Quality Assurance, o=Titanium
Metals Corp (TIMET), cn=Carl Adams,
email=Carl.Adams@Timet.com
Date: 2019.02.10 10:44:59 -08'00'
Adobe Acrobat version:
2019.010.20069

C. H. Adams - Quality Engineer

PTG

QA 1
Approved

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