



**DYNAMET**  
A Carpenter Company

196 Museum Road  
Washington, PA 15301  
Phone 724.228.1000  
Fax 724.228.4196

**PRODUCT CERTIFICATION**

WORK ORDER  
**501969**

SALES ORDER / RLS  
**053797 / 001**

SOLD TO

Quality System is registered  
to ISO 9001:2008 and AS9100:2009

CUSTOMER P.O.	CUSTOMER PART	QUANTITY	LADING NO	SHIPMENT DATE						
		<b>148 lbs</b>	<b>00074875</b>	<b>06/12/2015</b>						
PART INFORMATION <b>121DD2BZM04375PR</b>										
✓ <b>TI 6AL 4V ELI CG Bar - 0.4375" Dia.</b>										
✓ <b>Specifications: ASTM F 136 Rev: 13</b>										
✓ <b>Size: 0.4375" Dia. +/- 0.0005"</b>										
✓ <b>Length: 10' to 12' Random Length</b>										
✓ <b>Chemical Report (Wt%)</b>										
Heat	Al T	Al B	C T	C B	Fe T	Fe B	N T	N B	O T	O B
✓ 8R36304	6.02	6.09	.012	.018	.16	.15	.007	.006	.12	.11
V T	V B	Y T	Y B	Ti	Ot E	TOE				
4.03	4.01	<.005	<.005	BAL	<.10	<.30				
✓ <b>Hydrogen (As Shipped)</b>										
<b>Hydrogen (%)</b>										
0.0030										
✓ <b>As Shipped Properties</b>										
<b>UTS #1 (psi)</b>		<b>YS 0.2% #1 (psi)</b>		<b>EL #1 (%)</b>		<b>RA #1 (%)</b>				
144200		128900		18		48				
<b>Hardness (HRC)</b>										
33										
<b>Metallography Results</b>										
<b>Microstructure</b>										
<b>Alpha-Beta</b>										
Alpha Case										
<b>Material Free of Alpha Case</b>										
<b>Material Data</b>										
<b>Melt Origin</b>										
✓ USA										
Bt Tr °F										
1780										
<b>Melt Source</b>										
✓ RTI Niles										
Bt Tr °C										
972										



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**Certification Information**

As Shipped Condition

**Annealed 1300°F 2 Hours A/C**

**CERTIFICATION REQUIREMENTS**

Material ultrasonic inspected in accordance with ASTM F136 and AMS2631 class A1 & AA. All accepted.

Material free of mercury contamination.

Revision 1 06/19/2015: Add Mercury Contamination Statement.

**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.



TEST REPORT

	<input checked="" type="checkbox"/> RTI NILES 1000 WARREN AVE. NILES, OHIO 44446	DATE	SALES ORDER NO. 189448	GRADE <input checked="" type="checkbox"/> 6AL-4V ELI	PACKING LIST NO. 80373952
		CUSTOMER NAME, ADDRESS  DYNAMET			CUSTOMER ORDER NO. 046852
IDENTIFICATION & REFER		INGOT NO	LOT	S-R	MATERIAL
MATERIAL NUMBER		8R36304	01	00	BETA FORGED & CONDITIONED TI BLOOM
PRODUCTION ORDER		30176746			SPECIFICATION
					DI-2121 REV. B, DI-1036 REV B

CHEMISTRY:  INGOT (AVERAGE OF TOP-CENTER-BOTTOM)  INGOT (AVERAGE OF TOP-BOTTOM)  FINAL PRODUCT

ELEMENT	TOP	CENTER	BOTTOM	TEST INFORMATION		FRACTURE TOUGHNESS KSI/IN		
C	.012	.016	.018	TEST	LAB	Specimen Size:		
N	.007	.006	.006	All	RTI-Niles, Niles, OH	ID	Toughness #	Val. Ck
Fe	.16	.17	.15					
Al	6.02	6.05	6.02					
V	4.03	4.07	4.01					
O	.12	.12	.11					
Y	<30 PPM	<30 PPM	<30 PPM		RESIDUAL ELEMENTS, EACH <.10%			
B	<30 PPM	<30 PPM	<30 PPM		RESIDUAL ELEMENTS, TOTAL <.30%			
Cu	.003	.003	.004					
Si	.019	.019	.019		CHEMISTRY TEST METHODS:			
Ni	.003	.003	.003		ALLOY CHEM: SPARK OES			
					O2/N2: ASTM E 1409			
					HYDROGEN: ASTM E 1447			
					CARBON: ASTM E 1941			
TI	BALANCE							
FINAL	OXY							
PRODUCT	HYD(PPM)	T1A	19	B1A 8 (AT.M.R.)	1/4" BELOW SURFACE:	T1A 31	B1A 32	

PROPERTIES	L	T						
ULTIMATE KSI	/	/	/	/	/	/	/	/
YIELD	/	/	/	/	/	/	/	/
(.2%) OFFSET	/	/	/	/	/	/	/	/
% ELONGATION	/	/	/	/	/	/	/	/
(INCHES)	/	/	/	/	/	/	/	/
% REDUCTION	/	/	/	/	/	/	/	/
IN AREA	/	/	/	/	/	/	/	/
BEND 105	/	/	/	/	/	/	/	/
HARDNESS					BEND 180			
BETA TRANSUS	DTA: T1A 1770°F ± 10°F		B1A 1790 ± 10°F		STATIC NOTCH			
CREEP								
ULTRASONIC								
HEAT TREAT/ TEST FORGE								

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SHIPPING: NO. OF PIECES: 8; WEIGHT (LBS): 18,340.0; SIZE (IN): 2.00 X RCS X R/L; TEST PIECES: X X

OTHER DATA: INGOT WAS MELTED AT RTI ALLOYS, TPD, CANTON, OHIO, USA. MELT METHOD: PAM + VAR. MELT DATE: 5-24-13. SPONGE SOURCE: SITIX. MATERIAL IS FREE OF MERCURY, RADIUM, ALPHA SOURCE AND LOW MELTING OR ALLOY CONTAMINATION. RTI CERTIFIES THAT ALL PROCESSING PERFORMED IS FREE OF RADIOACTIVE CONTAMINATION. MATERIAL HAS NO WELD REPAIR. PRODUCED AND CONTROLLED IN ACCORDANCE WITH FIXED PROCESS AGREEMENT RTI/DYNAMET #48 DTD 10/25/10.

THIS IS TO CERTIFY THAT THE ABOVE TEST RESULTS ARE CORRECT AS CONTAINED IN THE RECORDS OF THE COMPANY AND CONFORM TO ORDER REQUIREMENTS

NAME/TITLE: WILLIAM A. COLLETTA, JR., CERTIFICATIONS SPECIALIST  
 SIGNED: *William A. Colletta, Jr.*  
 DATE: 7-24-13