

Perryman company
 213 Vandale Drive Houston, PA 15342 USA
 phone: 724-746-9390 fax: 724-746-9392

Certified Test Report

Heat No: PVD4590
 Melting Source: Perryman Company, USA
 Work Order No: 109647

Date: 06/05/2017
 Quantity: 1050 Lbs

Customer Order No: CRP-27005-KS

Product:

Ti 6Al-4V .3745/.3755" Dia. CG Bar X 12' (+/-5") R/L

Specification:

MIL-J-9047G Cond A Am 2 Chg Notice 1 Comp Ti6Al-4V,
 AMS 6931C, AMS 4928V, ASME SB-348 (2007) gr.5,
 ASTM B348 gr.5 (2013), ASTM F1472-14, ISO 5832-3
 (2016), AMS 4967L, EN 10204 3.1 (2004)

Condition:

Annealed 1400 F 2 Hours

Chemistry

ASTM E 1447:

Post processing Hydrogen Deterrnination

H: .0010

Metallographic Examination:

ASTM E407:

Microstructure - Equiax alpha-beta
 Macrostructure - Acceptable per AMS 2643E

ASTM E 407:

Surface Contamination -

No alpha case

Mechanical Properties

ASTM E8/E8M 2002-001:2005E

Condition

Tensile

Strength

2% Yield

Strength

Elongation

AD

ASTM E18

As Shipped

150.8

136.2

19

52

52

33

149.9

135.9

19

52

33

Solution treated and aged

180.1

166.0

11

53

1750 F 1 hr WQ

1000 F 4 hr AC

No weld repair performed at Perryman Company. Conforms to EN 10204 type 3.1 (2004)
 Perryman has complied with all producer requirements of AS6279
 Ultrasonic inspection to AMS 2631 rev D Class A1/AA - Passed

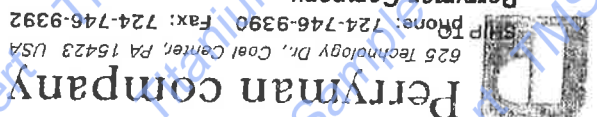
This is to certify that all test results conform to the specifications listed above and that all tests required were performed by Perryman Company.
 The material did not come in contact with Mercury or radioactive contamination at Perryman.
 Attached is a copy of the Ingot Chemistry.
 The test results relate only to the lots tested and are contained in the records of Perryman Company. The Certified Test Report cannot be reproduced except in full,
 without written approval.

[Signature] 06/05/17

Zachary S. Dragan
 Laboratory Manager

CERTIFICATE OF TEST
For TITANIUM INGOT
 HEAT NUMBER PVD4590

WORK ORDER 023630



Perryman company
 656 Technology Dr., Coal Center, PA 15423 USA
 Phone: 724-746-9390 Fax: 724-746-9392
 213 Vandale Drive
 Houston, PA 15342

QUANTITY 12140 lbs
 PCS 1

DESCRIPTION
 FORM: Ingot, Grade: Ti6Al4V, Size: 30

SPECIFICATION CAPABILITY
 P-101 Rev 5

Chemistry (WT%) Top	
O	.16
N	.007
C	.016
Fe	.18
Al	6.06
V	4.00
Si	.013
Cu	<.002
Pd	<.001
H	.0003
B	<.001
Ru	<.001

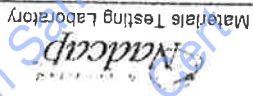
Chemistry (WT%) Bottom	
O	.16
N	.007
C	.016
Fe	.17
Al	6.18
V	3.93
Si	.012
Cu	<.002
Pd	<.001
H	.0003
B	<.001
Ru	<.001

Melting Process:
 EBOHR-VAR

Calculated Beta Transus T/B:
 1813F/1818F
 Calculated Beta Transus T/B C:
 989C/992C

Residual Elements, each < .10%
 Residual Elements, total < .30%

Melted in the United States of America.
 The material is free of radioactive and mercury contamination.
 Oxygen/Nitrogen tested in accordance with ASTM E1409.
 Carbon tested in accordance with ASTM E1941.
 Hydrogen tested in accordance with ASTM E1447.
 B, Y, Pd, Ru tested in accordance with ASTM E2371.
 Metallics Tested By XRF in accordance with ASTM E539.
 Elements not required by specification are included in Others(each) and Others(Total)



Materiale Testing Laboratory

Terrance J. Marth
 Terrance J. Marth
 Laboratory Supervisor

Date Printed: 12/19/2016

This material conforms to the chemistry and quality system requirements of the specifications referenced. The results relate only to the lot tested and the results are contained in the records of Perryman Company.
 The certificate of test cannot be reproduced except in full without the written approval of the laboratory, and the recording of false, fictitious, or fraudulent statements or entries on this document may be punished as a felony under federal law.