



Perryman company

213 Vandale Drive Houston, PA 15342 USA

phone: 724-746-9390 fax: 724-746-9392

Certified Test Report

Customer: **Performance Titanium Group**
8400 Miramar Road Suite 200-248C
San Diego, CA 92126

Heat No: **PV09014**
Melting Source: **Perryman Company, USA**
Work Order No: **178399**

Date: **11/28/2022**
Quantity: **71** **Lbs**

Customer Order No: **PTG66502**

Product: **Ti 6Al-4V ELI .1245/.1255" Dia. CG Bar X 12' R/L**

Specification: **MIL-T-9047G Comp Ti6Al-4VELI Cond A AM 2 Chg Not 1-,
ASTM F136-13, AMS 4930L, AMS T-9047A, ASTM F1472-20a,
ASTM B348 gr 5/23 Rev 21, AMS 6932C, ISO 5832-3 (2021),
EN 10204 3.1 (2004), AS6279B, AMS 4928W**

Condition: **Annealed 1300 F - 1 Hour**

Chemistry Wt % **ASTM E 1447:** Post processing Hydrogen Determination **H: .0013**

Metallographic Examination: **ASTM E407:** Microstructure - **Equiax alpha-beta** **ASTM E 407:** Surface Contamination - **No alpha case 500x**
Etchant: **PER1 & PER2** Macrostructure - **Acceptable per AMS 2643F Etchant PER 6**

| Mechanical Properties ASTM E8/EN 2002-001:2005E Condition | Tensile Strength ksi | ETTC2/ISO 20160:Photo Micrograph | | Transverse: A1 Reduction of Area % |
|---|----------------------------|----------------------------------|-----------------------|--|
| | | .2% Yield Strength ksi | Elongation 4D % | |
| As Shipped | 149.7 | 130.7 | 20 | 49 |
| | 149.3 | 130.4 | 21 | 50 |

100% Eddy Current Inspection at finished product - Passed
Perryman has complied with all producer requirements of AS6279
DFAR compliant to sections 252.225.7002,252.225.7008, and 252.225.7009.

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. All testing performed at room temperature unless otherwise noted. 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. Made in USA.

 11/29/2022

Donald L. Dobbs, Jr.
Senior Metallurgist



Materials Testing Laboratory

PTG
QA5
APPROVED
11-29-22



Perryman company
 625 Technology Dr., Coal Center, PA 15423
 phone: 724-746-9390 fax: 724-746-9392


SHIP TO

Perryman Company
 213 Vandale Drive
 Houston, PA 15342

CERTIFICATE OF TEST
For TITANIUM INGOT

WORK ORDER
049664

HEAT NUMBER
PV09014

| | | | | | | | | | | | | |
|--|--|------|------|------|------|------|-------|-------|-------|-------|-------|-------|
| QUANTITY | | PCS | | | | | | | | | | |
| 12700 LBS | | 1 | | | | | | | | | | |
| DESCRIPTION | FORM: Ingot, Grade: Ti6Al/4V Eli, Size: 30 | | | | | | | | | | | |
| SPECIFICATION CAPABILITY | | | | | | | | | | | | |
| P-104 Rev 3 | | | | | | | | | | | | |
| Chemistry (WT%) Top | | | | | | | | | | | | |
| O | N | C | Fe | Al | V | Si | Cu | Pd | Y | H | B | Ru |
| .12 | .005 | .016 | 0.18 | 6.11 | 4.17 | .015 | <.004 | <.005 | <.005 | .0004 | <.003 | <.005 |
| Chemistry (WT%) Bottom | | | | | | | | | | | | |
| O | N | C | Fe | Al | V | Si | Cu | Pd | Y | H | B | Ru |
| .12 | .007 | .016 | .18 | 5.99 | 4.02 | .014 | <.004 | <.005 | <.005 | .0005 | <.003 | <.005 |
| Comments | | | | | | | | | | | | |
| Melting Process: EBCHR-VAR | | | | | | | | | | | | |
| Calculated Beta Transus T/B: 1796F/1796F | | | | | | | | | | | | |
| Calculated Beta Transus T/B C: 980C/980C | | | | | | | | | | | | |
| Residual Elements, each < .05% | | | | | | | | | | | | |
| Residual Elements, total < .20% | | | | | | | | | | | | |
| Balance Titanium. | | | | | | | | | | | | |
| 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 tested in accordance with ASTM E2994. | | | | | | | | | | | | |
| Metallics Tested By XRF in accordance with ASTM E539. | | | | | | | | | | | | |
| Elements not required by specification are included in Others(each) and Others(Total) | | | | | | | | | | | | |
| PTG QA5 APPROVED 11-29-22 | | | | | | | | | | | | |
|  Materials Testing Laboratory | | | | | | | | | | | | |

This material conforms to the chemistry and quality system requirements of the specifications and/or Purchase Order 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.


Michael DeAngelis
 Senior Laboratory Technician