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15 Titanium 100 Titanium Way Toronto, OH, 43964 Telephone (740) 537-5694, Fax (740) 537-5653

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CERT ID 21722DHD01 05-SEP-2019 18:57:49 GMT

PURCHASE ORDER 14462

HEAT NUMBER 21722DH

GRADE TIMETAL®6-4 SHIP TO ADDRESS

Supra Alloys

352 Balboa Circle, Camarillo, CA 93012

PO#:

Tag#:

Supra Alloys

TIMS Titanium Sample Cert

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TEST NUMBER

S17766

PRODUCT DESCRIPTION

0.025" SO Sheet

DELIVERY CONDITION

Annealed

Specifications

um Sample Cert This material complies with the following specifications:

AMS 4911 N AMS 4911 P

AMS-T-9046 A

AB-1 COND A GRADE 5 ASME SB 265 -17 **GRADE 5**

ASTM B 265 -15 ASTM F 1472 -14

CMMP015 Rev E DMS 1592 H

MIL-T-9046 J AM 2

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Melt Method

EB+VAR

Meti/Process Location
TIMET - Morgantown, PA, USA /
TIMET - Toronto, OH, USA Sample Cert This Titarium

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Compliance Statements

- In accordance with MIL-T-9046 J Notice 2 cancellation notice, material is tested and certified to AMS-T-9046 B Table 1 superseding specification AMS 4911 Rev P.
- In accordance with AMS-T-9046 B cancellation notice, material is tested and certified to Table 1 superseding specification AMS 4911 Rev P.
- Surface free from alpha case and product conforms to the other technical requirements of the referenced specification(s).
- 4. Microstructure examined and acceptable to the order specifications.
- Bend testing performed meets or exceeds the requirements of the ordered specifications.
- TIMET-Toronto is an approved supplier of this product per DMS QPL 1592 Issue 19. Ingot melted in accordance with DMS 2442E-R1; TIMET-Morgantown, PA, is an approved ingot source per DMS QPL-2442 Issue 20.
- Laboratory testing complies with General Electric Aircraft Engines S-400 (3-June-16).
- 8. TIMET-Toronto complies with GE Aviation S-1000 (18-Dec-18).
- Material complies with DFARS 252.225-7008, DFARS 252.225-7009, and DFARS 252.225-7010.
- 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.
- 11. Material has been processed in accordance with the quality system per SABRe 2 revision 1, Approval #10727.
- 12. TIMET-Toronto has complied with all metal stock producer requirements of AS6279 A.
- TIMET-Toronto has a Quality Management System that is in compliance with ISO 9001:2015, and AS 9100:2016 Revision D. (AS9100 certificate is available at www timet.com)

Ingot Chemical Analysis (Weight percent)

Unless otherwise noted, Ingot Chemical Analysis performed at Morgantown Process Lab, 900 Hemlock Road, Morgantown, PA, 19543, USA

in.	Fe C	Z) _V	AI	Chillin	0	N HO	Y	()
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воттом	0.12	3.80	6.10	0.024	0.20	0.006	<0.0005	

Product Analysis (Weight percent)

Unless otherwise noted, Product Analysis performed at Toronto Laboratory, 100 Titanium Way, Toronto, OH, 43964, USA

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Chemistry Statements

- 1. Hydrogen values reported in PPM. Hydrogen determined by inert gas fusion per ASTM E1447. Carbon determined by combustion per ASTM E1941, Oxygen and Nitrogen determined by inert gas fusion per ASTM E1409. Henderson Melt: Metallics determined by Inductively Coupled Plasma-Atomic Emission Spectrometry (ICP-AES) per ASTM F2371. Morgantown Melt: Copper and Boron by atomic spectrometry (ingot only) and all other elements by x-ray fluorescence TWS Titanium Sample Cert TWS Titanium Sample Cert Titanium Sample Cert.
 - Sample Cert TIMS Titanium Sample Cert TIMS T Residual elements each less than 0.10% maximum, 0.40% maximum total.

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MS Titanium **Titanium Metals Corporation**

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Unless otherwise noted, testing performed at Toronto Laboratory, 100 Titanium Way, Toronto, OH, 43964, USA

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Telephone (740) 537-5694, Fax (740) 537-5653 Sample Cert

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RTT - Transverse (ASTM E 8) After Fracture

Test Condition: [MILL] Annealed 30 Minutes @ 1400°F, AC 0.2YS

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