

**Titanium Metals Corporation****Approved Certificate**

100 Titanium Way

Toronto, OH, 43964

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

Page 1 of 4

CERT ID

HN1266-T3

18-MAR-2015 20:01:53 GMT

PURCHASE ORDER

5875

SOLD TO CUSTOMER**HEAT NUMBER**

HN1266

GRADE

TIMETAL®50A

SHIP TO ADDRESS**TEST NUMBER**

W14189

PRODUCT DESCRIPTION

0.063" IQ Coil

DELIVERY CONDITION

Annealed & Pickled

Specifications

This material complies with the following specifications:

ASTM B 265 -13a e1 Grade 2

Melt Method

EB

Melt/Process Location

TIMET - Morgantown, PA, USA /

TIMET - Toronto, OH, USA

Compliance Statements

1. Surface free from alpha case and product conforms to the other technical requirements of the referenced specification(s).
2. 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.
3. Bend testing performed meets or exceeds the requirements of the ordered specifications.
4. TIMET-Toronto has a Quality Management System that is in compliance with ISO 9001:2008, and AS 9100:2009 Revision C. (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

	Fe	C	O	N
Sample ID				
TOP	0.08	0.013	0.11	0.006
BOT	0.08	0.009	0.10	0.007

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The intentional recording of false, fictitious, or fraudulent statements or entries on the certificate may be punished as a felony under federal law.

First in Titanium Worldwide

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SOLD TO CUSTOMER**Product Analysis**
(Weight percent)

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

H**Sample ID**

F	11
B	6

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 E2371. Morgantown Melt: Copper and Boron by atomic spectrometry (ingot only) and all other elements by x-ray fluorescence spectrometry.
2. Residual elements each less than 0.10% maximum, 0.40% maximum total.
3. Balance titanium.

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Mechanical Properties

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

Bend Test, L-Direction, R/T, (ASTM E 290)

BF 2.0

Test Condition: [MILL] CVA 3 to 14 Minutes @ 1370°F + leveling

20X105

Sample ID

P/F

F

PASS

B

PASS

Bend Test, L-Direction, R/T, (ASTM E 290)

BF 1.5

Test Condition: [MILL] CVA 3 to 14 Minutes @ 1370°F + leveling

10X180

Sample ID

P/F

F

PASS

B

PASS

Bend Test, T-Direction, R/T, (ASTM E 290)

BF 2.0

Test Condition: [MILL] CVA 3 to 14 Minutes @ 1370°F + leveling

20X105

Sample ID

P/F

F

PASS

B

PASS

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Bend Test, T-Direction, R/T, (ASTM E 290)

BF 1.5

Test Condition: [MILL] CVA 3 to 14 Minutes @ 1370°F + leveling

10X180

Sample ID

P/F

F

PASS

B

PASS

RTT - Longitudinal (ASTM E 8)

Test Condition: [MILL] CVA 3 to 14 Minutes @ 1370°F + leveling

0.2YS

U.T.S.

2inEL

Sample ID

ksi

ksi

%

F

44

69

28

B

42

68

28

RTT - Transverse (ASTM E 8)

Test Condition: [MILL] CVA 3 to 14 Minutes @ 1370°F + leveling

0.2YS

U.T.S.

2inEL

Sample ID

ksi

ksi

%

F

53

70

26

B

54

70

29

Results are from TIMET Quality Control Records on file

Sales Order #435028

Item # 10

v.1

Michael Giovannone



Digitally signed by

Michael Giovannone

Date: 2015.03.18

16:02:59 -04'00'

Michael Giovannone - Certification Specialist

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