FORM 44B REV 3/1/06

TEST REPORT

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RTI International Metals, Inc.

RMI TITANIUM COMPANY
1000 WARREN AVE.
NILES, OHIO 44446

☒ RTI TRADCO
1701 WEST MAIN ST.
WASHINGTON, MO 63090

DATE	SALES ORDER NO.	GRADE	PACKING LIST NO.
12/6/10	136389	6Al-4V	80269914

CUSTOMER NAME: RTI INTERNATIONAL METALS, LTD.

CUSTOMER ORDER NO.: RMI - 3378 A

MATERIAL: H.R. ANN. & CLD. TI SHEET

SPECIFICATION: BS3TA10:2009 BS2TA59:2009 AMS 4911L RR9000:SABRE
MIL-T-9046J AB-1 AM.2 AMS-T-9046A AB-1 ISO 5832 PT3 REV.2
PREN 3354 EDITION P3 EXCEPT SONIC & BENDS TO AMS 4911L
ASTM B 265-09A E1 GR.5

IDENTIFICATION & REFER	INGOT NO	LOT	S-R
MATERIAL NUMBER	8822964	02	10
PRODUCTION ORDER	30148893		

CHEMISTRY: ☐ INGOT (AVERAGE of TOP-CENTER-BOTTOM) ☒ INGOT (AVERAGE of TOP-BOTTOM) ☐ FINAL PRODUCT

ELEMENT			
C	.011		
N	.008		
Fe	.18		
Al	6.05		
V	3.96		
O	.16		
Y	<50PPM		
Ti	BALANCE		
FINAL PRODUCT	OXY		
	HYD(PPM)	25	

TEST	LAB
Chem/Hyd	RTI Tradco, Washington, Mo
Balance Of Chem	RTI Titanium, Niles, OH
Tensile/ASTME 8	RTI Tradco, Washington, Mo
Bend/ASTME 290	RTI Tradco, Washington, Mo
Micro/Surface Cont.	
ASTME 3-01/ASTME 407	RTI Tradco, Washington, Mo
Grain Size/ ASTME 112-04	RTI Tradco, Washington, Mo
	RESIDUAL ELEMENTS, EACH <.10%
	RESIDUAL ELEMENTS, EACH <.30%
	CHEMISTRY TEST METHODS:
	ALLOY CHEM: SPARK OES
	02/N2: ASTM E 1409
	HYDROGEN: ASTM E 1447
	CARBON: ASTM E 1941

FRACTURE TOUGHNESS KSI √ IN

Specimen Size: ID	Toughness #	Val. Ck.

PROPERTIES							
ULTIMATE KSI	L	143.4 / 143.5	/	/	/	/	/
	T	145.1 / 146.1	/	/	/	/	/
YIELD (.2%) OFFSET	L	135.8 / 135.9	/	/	/	/	/
	T	140.1 / 141.1	/	/	/	/	/
% ELONGATION (INCHES)	L	15.2 / 16.1	/	/	/	/	/
	T	15.5 / 16.2	/	/	/	/	/
% REDUCTION IN AREA	L	/	/	/	/	/	/
	T	/	/	/	/	/	/
BEND 105	L	5.0 TR /	/	BEND 180	5.0 TR /	/	/
	T	5.0 TR /	/	STATIC NOTCH	5.0 TR /	/	/
HARDNESS							
BETA TRANSUS							
CREEP							
ULTRASONIC							
HEAT TREAT/ TEAT FORGE		PROD. ANN. 1450°F 30 MIN. A.C.					

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SHIPPING	
NO. OF PIECES	2PCS
WEIGHT (LBS)	179#
SIZE (IN)	.1180 X 48.000 X96.000
TEST PIECES	X X

OTHER DATA:

INGOT WAS MELTED AT RTI-NILES, NILES, OHIO USA. MATERIAL PRODUCED IN ACCORDANCE WITH RMI'S ISO 9001:2000 & AS9100B APPROVAL. THIS ITEMS OF THE TEST CERT. HAVE BEEN INSPECTED & TESTED TO THE SPEC. DETAILED ABOVE & HAVE BEEN FOUND TO CONFORM IN ALL RESPECTS WITH YOUR ORDER. IT IS FURTHER CERTIFIED THAT IT IS TO THE SAME GENERAL STANDARD OF WORKMANSHIP AS THAT WHICH APPLIES TO SIMILAR ARTICLES SUPPLIED TO THE U.S. SERVICE DEPTS. PRODUCED & CONTROLLED IN ACCORDANCE WITH FPA RMI-AE #38 DTD 3/4/03 & BAE RTI-001 DTD 1/16/03. MELT METHOD: 3 AM + VAR. BARAO/0002 MAA. MATERIAL SUPPLIED IN ACCORDANCE WITH OUR BAE/AQQ/QSCI PART 3 APPROVAL. MATERIAL IS FREE OF MERCURY CONTAMINATION. MATERIAL HAS NO WELD REPAIR. MATERIAL MELTED & ROLLED IN THE U.S. & COMPLIES WITH DFARS EDITION 1993. SECTION 252-225-7014. PRODUCT CONFORMS TO ALL OTHER TECH. REQUIREMENTS OF THE SPEC. MATERIAL CHECKED FOR SUR. CONT. & MEETS THE REQUIREMENTS OF THE TEST. (ETCHANT - 5% HF / 95% WATER - 100X,400X & 1000X MAG.). MICROSTRUCTURE IS ACCEPTABLE & MEETS THE REQUIREMENTS OF THE TEST. (ETCHANT - 2% HF / 98% WATER - 100X MAG.). ASTM E 112-04 P.A. ACTUAL MICRO GRAIN SIZE IS 11 OR FINER. SHEETS TESTED @ ¼ & ½ T.

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

APPROVED CERTIFICATE

SERIAL NO. TO3150

NAME/TITLE: GEORGE SCHRECENGOST, SENIOR EXECUTIVE ADVISOR

SIGNED: GR Schrecengost

For and on behalf of RTI International Metals Inc.

DATE: 12/06/10

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TEST REPORT

RTI International Metals, Inc.

☐ RMI TITANIUM COMPANY
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12/6/10	136389	6Al-4V	80269914

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CUSTOMER ORDER NO.: RMI - 3378 A

MATERIAL: H.R ANN. & CLD. TI SHEET

SPECIFICATION: BS3TA10:2009 BS2TA59:2009 AMS 4911L RR9000:SABRE MIL-T-9046J AB-1 AM.2 AMS-T-9046A AB-1 ISO 5832 PT3 REV.2 PREN 3354 EDITION P3 EXCEPT SONIC & BENDS TO AMS 4911L ASTM B 265-09A E1 GR.5

IDENTIFICATION & REFER	INGOT NO	LOT	S-R
MATERIAL NUMBER	8822964	02	10
PRODUCTION ORDER	30148893		

CHEMISTRY: ☐ INGOT (AVERAGE of TOP-CENTER-BOTTOM) ☒ INGOT (AVERAGE of TOP-BOTTOM) ☐ FINAL PRODUCT

ELEMENT	
C	.011
N	.008
Fe	.18
Al	6.05
V	3.96
O	.16
Y	<50PPM
Ti	BALANCE
FINAL PRODUCT OXY	
FINAL PRODUCT HYD(PPM)	25

TEST INFORMATION	
TEST	LAB
Chem/Hyd	RTI Tradco, Washington, Mo
Balance Of Chem	RTI Titanium, Niles, OH
Tensile/ASTME 8	RTI Tradco, Washington, Mo
Bend/ASTME 290	RTI Tradco, Washington, Mo
Micro/Surface Cont.	
ASTME 3-01/ASTME 407	RTI Tradco, Washington, Mo
Grain Size/ASTME 112-04	RTI Tradco, Washington, Mo
RESIDUAL ELEMENTS, EACH <.10%	
RESIDUAL ELEMENTS, EACH <.30%	
CHEMISTRY TEST METHODS:	
ALLOY CHEM: SPARK OES	
02/N2: ASTM E 1409	
HYDROGEN: ASTM E 1447	
CARBON: ASTM E 1941	

FRACTURE TOUGHNESS MPA√M

Specimen Size: ID	Toughness #	Val. Ck.

PROPERTIES								
ULTIMATE MPA	L	988	/ 989	/	/	/	/	/
	T	1000	/ 1007	/	/	/	/	/
YIELD MPA (.2%) OFFSET	L	936	/ 937	/	/	/	/	/
	T	966	/ 973	/	/	/	/	/
% ELONGATION (INCHES)	L	15.2	/ 16.1	/	/	/	/	/
	T	15.5	/ 16.2	/	/	/	/	/
% REDUCTION IN AREA	L		/	/	/	/	/	/
	T		/0	/	/	/	/	/
BEND 105	L	5.00	/ 0.00	/		5.00	/	
	T	5.00	/	/	BEND 180	5.00	/	
HARDNESS					STATIC NOTCH			
BETA TRANSUS								
CREEP								
ULTRASONIC								
HEAT TREAT/ TEAT FORGE	PROD. ANN. 788°C 30 MIN. A.C.							

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SHIPPING	
NO. OF PIECES	2PCS
WEIGHT (Kg)	81.36
SIZE (mm)	3.00 X 1219.20 X 2438.40
TEST PIECES	X X

OTHER DATA:

INGOT WAS MELTED AT RTI-NILES, NILES, OHIO USA. MATERIAL PRODUCED IN ACCORDANCE WITH RMIS ISO 9001:2000 & AS9100B APPROVAL. THE ITEMS OF THE TEST CERT. HAVE BEEN INSPECTED & TESTED TO THE SPEC. DETAILED ABOVE & HAVE BEEN FOUND TO CONFORM IN ALL RESPECTS WITH YOUR ORDER. IT IS FURTHER CERTIFIED THAT IT IS TO THE SAME GENERAL STANDARD OF WORKMANSHIP AS THAT WHICH APPLIES TO SIMILAR ARTICLES SUPPLIED TO THE U.S. SERVICE DEPTS. PRODUCED & CONTROLLED IN ACCORDANCE WITH PPA RAMBAS 978 DTD 14/03 & BAB59-21001 DTD 1/10/03. MELT METHOD: PAM + VAR. BAB/AQ/9001/04/A. MATERIAL SUPPLIED IN ACCORDANCE WITH OUR BAB/AQ/QCAC PART 3 APPROVAL. MATERIAL IS FREE OF MERCURY CONTAMINATION. MATERIAL HAS NO WELD REPAIR. MATERIAL MELTED & ROLLED IN THE U.S. & COMPLIES WITH DFARS EDITION 1998, SECTION 252-225-7014. PRODUCT CONFORMS TO ALL OTHER TECH. REQUIREMENTS OF THE SPEC. MATERIAL CHECKED FOR SUR. CONT. & MEETS THE REQUIREMENTS OF THE TEST. (ETCHANT - 2% HF / 98% WATER - 100X, 400X & 500X MAG.). MICROSTRUCTURE IS ACCEPTABLE & MEETS THE REQUIREMENTS OF THE TEST. (ETCHANT - 2% HF / 98% WATER - 100X MAG.). 13/24 RA. ACTUAL MICRO GRAIN SIZE IS 12 OR FINER. SHEETS TESTED # 18 & 20 LOT.

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

APPROVED CERTIFICATE

SERIAL NO. TO3150

NAME/TITLE: GEORGE SCHRECENGOST, SENIOR EXECUTIVE ADVISOR

SIGNED: GS Schreengost

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