



13448  
HUNTINGTON ALLOYS CORPORATION  
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Certificate No. 68797-00

Dated 10-JAN-17

### CERTIFIED MATERIALS TEST REPORT

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Note: The recording of false, fictitious or fraudulent statements on entries on this document may be punishable as a felony under federal statute.

This report relates only to the item(s) tested and may not be reproduced except in full.

**Customer**

HIGH TEMP METALS  
12500 FOOTHILL BLVD  
SYLMAR  
CA  
91342-6038

**Ship To**

HIGH TEMP METALS  
12500 FOOTHILL BLVD  
SYLMAR  
CA  
91342-6038

Sales Order Number	Purchase Order Number	Mark Order Number	Material Heat / Lot Identity
100066923 / 1.1	8988	13448	ZZ8464XG SP81A

UNS Number  
N06002

**Material Description**

INCONEL alloy HX, EAF-AOD-ELECTROSLAG REMELTED, , CR SHEET, PICKLED, SOL TR, .1250 X 36.0000, 120.0000, IN 25 PCS 4140 LBS

**Specifications**

SAE AMS 5536N/ ASTM B 435-06/ ASME SB-435 2015 EDITION/ GE B50T83 S3/GE B50A436C REV A/ GE S-400 (6-03-16)/ GE S-1000 (9-6-16)/ NACE MR0175-ISO 15156-3 (2015)/ NACE MR0103-2012/ P&W MCLM F-17 REV C / P&W MCLM F-14 REV B/ PWA 300BP/ WERKSTOFF 2.4665/ MARK PER ORDER.

**ANALYSIS**

	C %	MN %	FE %	S %	SI %	CU %	NI %	CR %	AL %
H	.08	.51	18.65	.0004	.32	.22	47.3	22.39	.13
Method	C/S	ICP	ICP	C/S	ICP	ICP	ICP	ICP	ICP
	TI %	CO %	MO %	B %	P %	W %			
H	.02	.72	8.51	.002	.016	.60			

INCOLOY®, INCONEL®, MONEL®, NILO®, NIMONIC®, Ni-SPAN-C®, UDIMET®, DURANICKEL®, 601GC®, 625LCF®, 718SPF®, 740H®, 800HT®, 945®, and 945X® are trademarks of the Special Metals group of companies

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Method ICP ICP ICP ICP ICP ICP

### ANALYSIS METHOD LEGEND

ICP - Inductively Coupled Plasma

C/S - Carbon/Sulfur

### TENSILE TEST

#### ROOM TEMP TENSILE - TRANS|LAB|MECHANICAL

TEST TEMPER LOCATION HARDNESS HARD TYPE TENSILE KSI .2% YIELD KSI EFF GA LENG IN ELONG% ORIENT

SA	F	92.4	HRB	119.0	55.9	2	42.4	TRANS
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### CREEP TEST

#### STRESS RUPTURE - TRANS|LAB|MECHANICAL

TEST TEMPER LOCATION TEMPERATURE F INITIAL STRESS PSI TEST ORIENT RUPTURE LIFE HRS ELONGATION%

SA	F	1500	16500	TRANS	60.4	128.9
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### HEAT TREATMENT

TREATMENT FURNACE TEMP SCALE TEMP 1 F TEMP 1 HOLD HOLD 1 UNITS CHANGE 1

SOL TRT	CAP	F	2150	3.2	MN	AC
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### OTHER TESTS

#### BEND TEST - TRANS|LAB|MECHANICAL

TEST TEMPER LOCATION TEST VERDICT BEND FACTOR BEND ANGLE CRACK CHECK ORIENT

SA	F	P	2T	180	NC	TRANS
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#### GRAIN SIZE MEASUREMENT|LAB|METALLOGRAPHY

TEST TEMPER TEST ORIENT AV GS ASTM NRM or DUP LOCATION

SA	TRANSVERSE	6.5	NORMAL	F
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#### INTERGRANULAR ATTACK TEST|LAB|METALLOGRAPHY

TEST TEMPER LOCATION VERDICT SURFACE COND MAGNIFICATION TEST ORIENT

SA	F	P	UNETCHED	500X	LONG
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PRODUCED & CONTROLLED TO PWA MCLM-F17 REQUIREMENTS / TESTING IN ACCORDANCE WITH PWA MCLM F-23

NO WELDING OR WELD REPAIR WAS PERFORMED.

DODD-FRANK ACT COMPLIANT.

METRIC DIMS: 3.17MM X 914MM X 3048MM

LOCATION LEGEND: B = BACK C = CENTER F = FRONT H = HEAD M = MIDDLE T = TOE

TEST VERDICT LEGEND: P = PASS W = WAIVER

TEST TEMPER LEGEND

SA - Solution anneal

ALL TEST RESULTS ARE REPORTED TO AT LEAST THE REQUIRED PRECISION BY THE ROUNDING METHOD OF ASTM E 29  
UNLESS OTHERWISE REQUIRED BY PURCHASE ORDER OR SPECIFICATION.

COUNTRY OF ORIGIN: MELTED AND MANUFACTURED IN THE USA. DFARS PART 252.225.7014 AND 252.225.7008 COMPLIANT.

THIS CERTIFICATION AFFIRMS THAT THE CONTENTS OF THIS REPORT ARE CORRECT AND ACCURATE AND THAT ALL TEST RESULTS AND  
OPERATIONS PERFORMED BY SPECIAL METALS CORPORATION, INC. OR ITS SUBCONTRACTORS ARE IN COMPLIANCE WITH THE MATERIAL  
SPECIFICATIONS.

QUALITY SYSTEM MEETS REQUIREMENTS OF DIRECTIVE 97-23/EC (PRESSURE EQUIPMENT DIRECTIVE),

ANNEX 1, CHAPTER 4.3 PER ABS GROUP LTD CERTIFICATE 41734 (EXPIRES JULY 28, 2017).

HUNTINGTON ALLOYS CORPORATION IS AN ACCREDITED INDEPENDENT NADCAP MATERIALS TESTING LABORATORY VIA CERTI-  
FICATE NUMBER 3200165734 (EXPIRES APRIL 30, 2018) FOR ALL TESTING SPECIFIED IN THE SCOPE OF ACCREDITATION.  
MATERIAL PRODUCED UNDER QA SYSTEM DOCUMENTED IN HUNTINGTON ALLOYS CORP QA MANUAL REV. 52, DATED 02/01/2016  
QA MANUAL NOT TO IMPLY COMPLIANCE TO ASME SECTION III. COMPLIANCE MUST BE OTHERWISE STATED ON CMTR.  
QUALITY SYSTEM CERTIFICATION: ISO 9001:2008 (ABS-QE CERT. 30125); EN 10 204/DIN 50049 (TYPE 3.1)  
LABORATORY IS ACCREDITED TO ISO/IEC 17025:2005 FOR MECHANICAL TESTING AND CHEMICAL ANALYSIS.

VISUAL AND DIMENSIONAL EXAMINATION SATISFACTORY.

MATERIAL, WHEN SHIPPED, IS FREE FROM CONTAMINATION BY MERCURY, RADIUM, ALPHA SOURCE, AND LOW MELTING ELEMENTS.

CHEMICAL ANALYSIS AS REQUIRED FOR CARBON, SULFUR, NITROGEN, OR OXYGEN IS PERFORMED BY COMBUSTION TECHNIQUES.

ALL OTHER REPORTED ELEMENTS ARE ANALYZED BY X-RAY AND/OR EMISSION SPECTROSCOPY."

AUTHORIZED QUALITY CERTIFICATION REPRESENTATIVES:

W.E. BOLEN, D.K. MILLER, K.R. SMITH, V.A. POWELL, S.E. LEER, K.BORSODI, ROBERT D. DILLE, ROBERT SMITHSON

INCOLOY®, INCONEL®, MONEL®, NILO®, NIMONIC®, Ni-SPAN-C®, UDIMET®, DURANICKEL®, 601GC®, 625LCF®,  
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End Of Certificate

This is to certify that all required samplings inspections and tests have been performed in accordance with the order and specification requirements. The test report represents the actual attributes of the material furnished and the values shown are correct and true. The material described by this certificate is in full compliance with all order and inspection requirements. We hereby certify that the figures given are in accordance with the specified contract requirements.

REV. 8/08

Signed

For and on behalf of HUNTINGTON ALLOYS CORPORATION  
Authorized Signature

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