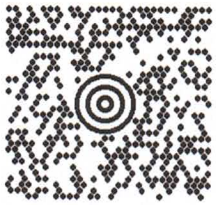
FROM:
SHIPPING
(765) 945-8230
HIGH PERFORMANCE ALLOY
1985 E 500 N
WINDFALL IN 46076-9467

70 LBS **1 OF 1**
DWT: 18,6,4

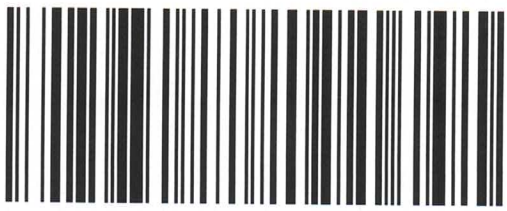


MD 204 9-11

SHIP TO:

NIST
ROOM 140
BLDG 304
100 BUREAU DR.
GAITHERSBURG MD 20899

UPS GROUND
TRACKING #: 1Z 740 338 03 5626 5964



REF 1:113077
REF 2:VERBAL JENNIFER

BILLING: P/P

WS 22.0.15 Brother MFC-L 20.0A 10/2019

Fold here and place in label pouch

High Performance Alloys, Inc.

1985 E 500 N Windfall, Indiana 46076
444 Wilson St Tipton, Indiana 46072
Phone: (765) 945-8230 Fax: (765) 945-8295

Packing Slip **82330**
Shipped Date **11/20/19**
Shipped Via **UPS**

Phone 3019755471
Contact BRANDON LANE

Shipping Address

NIST
100 Bureau Drive
Bldg 304 Room 140
Gaithersburg, MD 20899-8220

PackinSlip #

Phone 3019755471
Contact BRANDON LANE

Billing Address

NIST
100 Bureau Drive

Gaithersburg, MD 20899-8220

Pcs	Alloy	Heat	Description
48	625	NX0Y08AG121	PLATE: 0.25" Thick x 1" x 4"
17.5 Lbs			

SO #113077-01 PO #verbal jennifer

24	718	HT4685EK15	PLATE: 0.25" Thick x 1" x 4"
8.5 Lbs			

SO #113077-02 PO #verbal jennifer

20	718	2180-6-9796	PLATE: 0.375" Thick x 4" x 4"
39.5 Lbs			

SO #113077-03 PO #verbal jennifer

NO MATERIAL RETURNED WITHOUT AUTHORIZATION.

Total Weight: 70 Lbs **Package: 18X6X4**

Pro/Tracking: 1Z7403380356265964
Packed By: JM **Checked by: BJ** **Packages: 1**

HUNTINGTON ALLOYS CORPORATION
3200 Riverside Drive, Huntington, West Virginia 25705-1771 USA
Tel: +1.304.526.5100 Toll-Free in the USA: 1.800.334.4626
Fax: +1.304.526.5643 info@specialmetals.com

CERTIFICATE NO. N37513-00

Dated 17-JUL-14

CERTIFIED MATERIALS TEST REPORT

Customer
HIGH PERFORMANCE ALLOYS, INC.
1985E 500N
WINDFALL, IN 46076 US

Ship To
HIGH PERFORMANCE ALLOYS, INC.
1985E 500N
WINDFALL, IN 46076 US

Sales Order Number	Purchase Order Number	Mark Order Number	Material Heat / Lot Identity
100060697 / 1.1	32000356	32000356	NX0Y08AG121

UNS Number
N06625

Material Description

INCONEL alloy 625, AIR INDUCTION MELTED-ELECTROSLAG REMELTED, , HOT ROLLED PLATE, DESCALED, ANNEALED, .2500, 96.0000, 240.0000, IN
1 PC PLATE# P14630 1925 LBS

Specifications

ASME SB-443 2013 EDITION GR 1/ ASTM B 443-00(2009) GR 1/ GE S-400 (10-15-12)/ GE S-1000 (12-4-13).

ANALYSIS

	C %	MN %	FE %	S %	SI %	NI %	CR %	AL %	TI %
H	.02	.20	4.59	.001	.15	60.3	21.52	.09	.17
Method	C/S	ICP	ICP	C/S	ICP	ICP	ICP	ICP	ICP

	CO %	MO %	NB %	P %
H	.24	9.08	3.35	.010
Method	ICP	ICP	ICP	ICP

	NB+TA
H	3.35
Method	

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CERTIFICATE NO. N37513-00

Dated 17-JUL-14

CERTIFIED MATERIALS TEST REPORT

ANALYSIS METHOD LEGEND

ICP - Inductively Coupled Plasma
C/S - Carbon/Sulfur

TENSILE TEST

ROOM TEMP TENSILE - TRANS|LAB|MECHANICAL

PIECE ID	TEST TEMPER	HARDNESS	HARD TYPE	TENSILE KSI	.2% YIELD KSI	EFF GA LNGTH IN	ELONG	ORIENT
P14630	AN	93.3	HRB	129.0	72.9	2	46.2	TRANS

HEAT TREATMENT

TREATMENT	FURNACE	TEMP SCALE	TEMP 1 F	TEMP 1 HOLD	HOLD 1 UNITS	CHANGE 1
ANNEAL	SPF	F	1825	20	MN	AC

NO WELDING OR WELD REPAIR WAS PERFORMED.

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

TEST TEMPER LEGEND
AN - Annealed

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

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 30,2014).""

HUNTINGTON ALLOYS CORPORATION IS AN ACCREDITED INDEPENDENT NADCAP MATERIALS TESTING LABORATORY VIA CERTIFICATE NUMBER 127805 (EXPIRES OCTOBER 31, 2014) FOR ALL TESTING SPECIFIED IN THE SCOPE OF ACCREDITATION.
MATERIAL PRODUCED UNDER QA SYSTEM DOCUMENTED IN HUNTINGTON ALLOYS CORP QA MANUAL REV. 50, DATED 4/8/2013
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.

HUNTINGTON ALLOYS CORPORATION
3200 Riverside Drive, Huntington, West Virginia 25705-1771 USA
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Fax: +1.304.526.5643 info@specialmetals.com

CERTIFICATE NO. N37513-00

Dated 17-JUL-14

CERTIFIED MATERIALS TEST REPORT

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, G.J. BURKHEAD, S.E. LEER

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

HUNTINGTON ALLOYS CORPORATION
3200 Riverside Drive, Huntington, West Virginia 25705-1771 USA
Tel: +1.304.526.5100 Toll-Free in the USA: 1.800.334.4626
Fax: +1.304.526.5643 info@specialmetals.com

Certificate No. 59139-00

Dated 11-FEB-16

CERTIFIED MATERIALS TEST REPORT

Customer
HIGH PERFORMANCE ALLOYS INC
PO BOX 40
444 WILSON ST
TIPTON
IN 46072

Ship To
HIGH PERFORMANCE ALLOYS INC
1985 E 500 N
WINDFALL
IN
46076

Sales Order Number	Purchase Order Number	Mark Order Number	Material Heat / Lot Identity
100064886 / 6.1	504355-0M	504355-0M	HT4685EK15

UNS Number
N07718

Material Description

INCONEL alloy 718, VACUUM INDUCTION MELTED-ELECTROSLAG REMELTED, , HOT ROLLED PLATE, DESCALED, ANNEALED, .2500, 48.0000, 253.0000, IN
1 PC PLATE# P51510 995 LBS

Specifications

SAE AMS 5596K/ ASTM B 670-07(2013) MARKING WAIVED/ GE B50TF14 S22 CL A & E - CL B & F CAPABILITY MARKING WAIVED.

ANALYSIS

	C %	MN %	FE %	S %	SI %	CU %	NI %	CR %	AL %
H	.04	.08	17.37	.001	.07	.22	53.43	18.66	.57
Method	C/S	XR26	XR26	C/S	OES	XR26	XR26	XR26	XR26

	TI %	CO %	MO %	TA %	B %	NB %	P %
H	.97	.25	2.88	.003	.001	5.11	.007
Method	XR26	XR26	XR26	OES	OES	XR26	OES

	NB+TA
H	5.11
Method	

ANALYSIS METHOD LEGEND

C/S - Carbon/Sulfur

HUNTINGTON ALLOYS CORPORATION
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Certificate No. 59139-00
Dated 11-FEB-16

CERTIFIED MATERIALS TEST REPORT

XR26 - X-Ray Fluorescence 2600
OES - Optical Emission Spectroscopy

TENSILE TEST

HIGH TEMP TENSILE - TRANS|LAB|MECHANICAL

TEST TEMPER	TEST TEMP F	TENSILE KSI	.2% YIELD KSI	EFF GA LNGTH IN	ELONG%	ORIENT
AG	1200	151.8	128.3	1	20.1	TRANS
MG	1200	153.4	128.2	1	15.5	TRANS

ROOM TEMP TENSILE - TRANS|LAB|MECHANICAL

PIECE	TEST TEMPER	HARDNESS	HARD TYPE	TENSILE KSI	.2% YIELD KSI	EFF GA LNGTH IN	ELONG%	ORIENT
P51510	AN	88.6	HRB	123.8	58.9	2	47	TRANS
P51510	AG	42.6	HRC	196.7	169.2	2.00	13.0	TRANS
P51510	MG	43.1	HRC	187.7	155.3	2.00	14.2	TRANS

CREEP TEST

STRESS RUPTURE - TRANS|LAB|MECHANICAL

TEST TEMPER	TEMPERATURE F	INITIAL STRESS PSI	TEST ORIENT	RUPTURE LIFE HRS	ELONGATION%
AG	1200	100000	TRANS	97.8	13.1

RED OF AREA%
0

TEST TEMPER	TEMPERATURE F	INITIAL STRESS PSI	TEST ORIENT	RUPTURE LIFE HRS	ELONGATION%
MG	1200	100000	TRANS	69	19.2

RED OF AREA%
0

OTHER TESTS

GRAIN SIZE MEASUREMENT|LAB|METALLOGRAPHY

PIECE ID	TEST TEMPER	TEST ORIENT	AV GS ASTM	NRM or DUP
P51510	AN	LONGITUDINAL	7	NORMAL

HUNTINGTON ALLOYS CORPORATION
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Certificate No. 59139-00

Dated 11-FEB-16

CERTIFIED MATERIALS TEST REPORT

MICROSTRUCTURE TEST|LAB|METALLOGRAPHY

PIECE	TEST VERDICT	AREA EVAL	METHOD	E50TF133 STRUCTURE	E50TF133 AGS
P51510	P	X SECTION	GE-E50TF133	UNIFORM	7

E50TF133 ALA	E50TF133 GS DIST	MAGNIFICATION
4	N/A	100X

NO WELDING OR WELD REPAIR WAS PERFORMED.
DAMAGE TO PLATE ACCEPTED PER MD-056730

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

TEST VERDICT LEGEND: P = PASS W = WAIVER
TEST TEMPER LEGEND
AG - Annealed + age hardened
AN - Annealed
MG - Mill solution anneal+ lab solution anneal + aged
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 CERTIFICATE 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. 51, DATED 10/17/2014
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.

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Fax: +1.304.526.5643 info@specialmetals.com

Certificate No. 59139-00

Dated 11-FEB-16

CERTIFIED MATERIALS TEST REPORT

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, M. WINSEMIUS K.BORSODI

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

CERTIFICATION OF TESTS • RAPPORT D'ESSAIS CERTIFIE • WERKSZEUGNIS

Sales Order No Reference Commande Bestellungs Nr	Date Entered Date De Commande Bestelldatum	Customer Reference Reference Client Kundenbestelldaten	Report No. Rapport No Zeugnis Nr	Pages of Pages Page de Pages Anzahl der Seiten
824798001-0	02/08/16	8590	20160927015	1 Of 3

HAYNES International

CUSTOMER COPY

Haynes International
1020 West Park Avenue
PO Box 9013
Kokomo, Indiana, 46902

Sold To • Client • Bestellaranschrift
HIGH PERFORMANCE ALLOYS, INC.
1985 500N
WIDFALL, IN 46076 US

Ship To • Destinataire • Bestellmenge
HIGH PERFORMANCE ALLOYS, INC.
1985 500N
WIDFALL, IN 46076 US

Product Description • Description Produit • Material Beshreibung
0.395 (0.384/0.449) x 48 x 200
10.0 MM x 1219 MM x 5080 MM
HAYNES(R) 718 ALLOY PLATE - PLATE
Nadcap Materials Testing Accredited
GE# 19762, S400 2/7/2014, S1000 12/4/2013, EN 10204 3.1, AS9100

Specification • Specification • Spezifikation	Quantity Ordered Quantie Commandee Bestellemenge	Quantity Shipped Quantitie Expediee Liefermenge
AMS 5596, K; AMS 5662, M; ASME-SB-637, 10, UNS# N07718; ASTM-B-637, 12, UNS# N07718; ASTM-B-670, 07, UNS# N07718; B50TF14, S22, Cl. A; B50TF14, S22, Cl. E; MSRR 7116, 9; PWA-S-5596, D; MR0175-2009 A; RR9000:SABRe	4 PC	3 PC

Chemical Analysis • Analyse Chimique • Chemische Analyse

Heat Number Numero De Coulee Charge Nr	Al	B	C	Cb+Ta (Nb+Ta)	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S	Si	Ti	V	W	
2180 6 9796																		
2180 6 9796	0.57	0.004	0.051	4.97	0.35	18.30	0.06	18.40	0.22	3.04	52.20	0.008	<0.002	0.08	1.01			PRIMARY BUTT END *03

	Cb(Nb)	Ta	Zr	Bi	Se	La	C+N+Cb+9	Pb	Mg	Y	Ag	N	Ca	Al+Ti	Ni+Co	Ni+Mo		
2180 6 9796				<0.00003	<0.0001			<0.0005			<0.0002							
2180 6 9796	4.970	<0.05													52.550		PRIMARY BUTT END *03	

Certified By • Certifie Par • Bescheinigt Durch: Jessica Holt
Certification Technician

9/27/2016

Jessica L. Holt

CERTIFICATION OF TESTS • RAPPORT D'ESSAIS CERTIFIE • WERKSZEUGNIS

Sales Order No Reference Commande Bestellungs Nr	Date Entered Date De Commande Bestelldatum	Customer Reference Reference Client Kundenbestelldaten	Report No. Rapport No Zeugnis Nr	Pages of Pages Page de Pages Anzahl der Seiten
824798001-0	02/08/16	8590	20160927015	2 Of 3

HAYNES International

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Haynes International
1020 West Park Avenue
PO Box 9013
Kokomo, Indiana, 46902

Tensile Test at Room Temperature • Essai De Traction A Temp. Ambiante • Zugversuch Bei Raum Temp.

Ultimate Zugfestigkeit	1% Yield Lim. Elast. A 1% 1% Strieckgrenze	0.2% Yield Lim. Elast. A 0.2% 0.2% Strieckgrenze	% Elong In % Allong EN % Dehnung 4D	%RA %RA	
216000 PSI		180000 PSI	20 %	46 %	1)A)L)
207000 PSI		175000 PSI	24 %	45 %	1)A)T)
209000 PSI		165000 PSI	20 %	42 %	1)B)L)
205000 PSI		165000 PSI	27 %	38.5 %	1)B)T)
131000 PSI		61500 PSI	50 %		1)C)T)

Tensile Test at Elevated Temperature • Essai De Traction A Hte.Temp. Warm Zugversuch

Test Essai Versuch Temp:	Ultimate Zugfestigkeit	1% Yield Lim. Elast. A 1% 1% Strieckgrenze	0.2% Yield Lim. Elast. A 0.2% 0.2% Strieckgrenze	% Elong In % Allong EN % Dehnung 4D	%RA %RA	
1202 °F	175700 PSI		148100 PSI	24 %	45.5 %	1)A)L)#
1200 °F	172600 PSI		146800 PSI	20 %	43.5 %	1)A)T)#
1202 °F	171300 PSI		146700 PSI	24 %	34.5 %	1)A)T)#
1200 °F	169200 PSI		140100 PSI	21 %	32 %	1)B)L)#
1200 °F	168600 PSI		140900 PSI	22 %	43 %	1)B)T)#

Stress Rupture Temperature • Essai A Charge De Rupture Zeitstandversuch

Test Essai Versuch Temp:	Stress Constrainte Spannung	Hours Heures Stunden	% Elong In % Allong EN % Dehnung 4D	% RA % RA	
(T)1200 °F	105000 PSI	389.2 HRS	26.2 %	61.3%	1)A)#
(T)1202 °F	100800 PSI	521.2 HRS	23.2 %	61.1%	1)A)#
(L)1200 °F	110000 PSI	169.4 HRS	38.9 %	71.6%	1)A)#
(T)1200 °F	105000 PSI	263 HRS	25 %	62 %	1)B)
(L)1200 °F	110000 PSI	93 HRS	35.1 %	62.9%	1)B)#

Annealed Hardness Durette Recuit Geglueht Haerte	Aged Hardness Durette Vieilli Gealtert Haerte		Grain Size Grosseur De Grain Korngroesse						IGA	Uniformity	Corrosion Rate		Oxidation Rate	Charpy Impact Test				Creep Rupture				
			Grain Size	Predominant Grain Size	Recry. Grain	Unrecry. Grain %	ALA	P&W Figure Number	Attack Depth		Corrosion MPY	Test Method		Toughness Avg Ft. Lbs.	Toughness 1 Ft. Lbs.	Toughness 2 Ft. Lbs.	Toughness 3 Ft. Lbs.	Test Essai Versuch Temp:	Stress Constrainte Spannung PSI	Hours Heures Stunden	% Elong In % Allong EN % Dehnung	% Elong @ 15 Hrs
90 HRBW	44 HRC 39 HRC	1)C) 1)A) 1)B)	7.5	7.5	100	0	6	1		1												

Certified By • Certifie Par • Beschcinigt Durch: Jessica Holt
Certification Technician

9/27/2016

1) 2782479891

Jessica L. Holt

CERTIFICATION OF TESTS • RAPPORT D'ESSAIS CERTIFIE • WERKSZEUGNIS

Sales Order No Reference Commande Bestellungs Nr	Date Entered Date De Commande Bestelldatum	Customer Reference Reference Client Kundenbestelldaten	Report No. Rapport No Zeugnis Nr	Pages of Pages Page de Pages Anzahl der Seiten
824798001-0	02/08/16	8590	20160927015	3 Of 3

HAYNES International

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Haynes International
1020 West Park Avenue
PO Box 9013
Kokomo, Indiana, 46902

Microstructure Evaluation of B50TF14 S22 Class E
Evaluated to E50TF133.

Etchant: HCL-H2O2
Magnification: 100x
Morphology: Banded
Avg. Fine area grain size: 9.0
Avg. Coarse area grain size: 5.5
Average grain size: 5.5
Largest Grain (ALA):4.5
Disposition: Within Specification Limits
Report Number: R624225B

Evaluation performed by:
Dirats Laboratory
41 Airport Road
PO Box 39
Westfield, MA 01086-0039

MELT METHOD: VIM/ESR NO WELD REPAIRS PERFORMED ROHS COMPLIANT COMPLIES WITH DFARS 252.225-7014 & 225.7002-3(1)(B) WERKSTOFF 2.4668 DODD-FRANK COMLIANT
MATERIAL ONLY MEETS THE CHEMISTRY REQIUREMENTS PER NACE MR0103 SECTION 3.1.1.1.1.
Heat Codes: AMS 5596/69796: YCELK, AMS 5662/69796: YCELL, PWA-S-55/69796: YCELM
All tests and inspections have been performed and results meet specification requirements.
THIS MATERIAL IS FREE FROM MERCURY, CADMIUM, RADIUM, AND ALPHA SOURCE CONTAMINATION.
THIS MATERIAL WAS MELTED AND MANUFACTURED IN THE UNITED STATES.
When microstructure analysis is performed, the etchant used is H2O2 and HCl. Samples were viewed at 100-500x magnification. Grain size evaluation is performed to the requirements of ASTM E112- 96(2004)e2 Plate 1. Samples are prepared per ASTM E3-01. The material has been evaluated for alloy depletion.
Material controlled to PWA 300 and PWA LCS as per MCL F-17.
Material acceptable for Pratt & Whitney end use.
No welding performed on this material.
This material was melted and manufactured in the United States.
Microstructure: Acceptable
Surface microstructural evaluation was performed at 500X magnification.
Tested at Haynes International, Inc. Kokomo, In.
Samples tested to B50TF14 Cl. F condition and material supplied to Cl.E condition.
Microstructure complies with E50TF133 Class C.
Samples tested to B50TF14 Cl.B condition and material supplied to Cl.A condition.
This material was vacuum induction melted followed by electro flux remelt.
Material produced by Manufacturer`s Standard Procedure No. 043 Amend. 4HI/2.
This material meets the requirements of RR9000:SABRe
All aged test specimens are aged after final machining.
Mill Orders Used: 2782479891 (3 PC)
This test was performed at Westmoreland Mechanical Testing and Research, Inc., 221 Westmoreland Drive, Youngstown, PA, Phone # (724)537-3131 Fax # (724)537-3151
Method of Chemistry Analysis for Heat# 69796 PRIMARY: DIRATS LABORATORIES (AG,BI,PB,SE);
Method of Chemistry Analysis for Heat# 69796 BUTT END *03: O.E. (Al,B,P,Si); LECO (C,S); XARL LINFIT (Cb,CBTA,Co,Cr,Cu,Fe,Mn,Mo,Ni,Ta,Ti);
A) 1742 °F to 1814 °F; Step 1:1325 °F, ; Step 2:1150 °F,
B) 1742 °F to 1814 °F; Step 1:1750 °F, ; Step 2:1325 °F, ; Step 3:1150 °F,
C) 1742 °F to 1814 °F

Certified By • Certifie Par • Bescheinigt Durch: Jessica Holt 9/27/2016
Certification Technician

Jessica L. Holt