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
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HAYNES International

CUSTOMER COPY 13042

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

Sold To • Client • Bestellaranschrift
HIGH TEMP METALS INC
12500 FOOTHILL BLVD
SYLMAR
CA 913426038 USA

Ship To • Destinataire • Bestellmenge
HIGH TEMP METALS INC
12500 FOOTHILL BLVD
SYLMAR
CA 913426038 USA

Product Description • Description Produit • Material Beshreibung
0.395 (0.385/0.425) x 48 x 144
10.0 MM x 1219 MM x 3657 MM
HAYNES(R) 25 ALLOY 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 5537, H; RR9000:SABRe; AMS 5759, L	2 PC	2 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	
1860 5 1436			**0.109**		**BAL**	**20.50**		**2.50**	**1.52**		**10.10**	**0.007**	**<0.002**	**0.25**			**14.80**	**BUTT END *01**
	Cb(Nb)	Ta	Zr	Bi	Se	La	C+N-Cb/9	Pb	Mg	Y	Ag	N	Ca	Al+Ti	Ni+Co	Ni+Mo		
1860 5 1436																	**BUTT END *01**	

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

10/7/2015

Jessica L. Holt

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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	
157000 PSI		67000 PSI	49 %	38 %	1)A)L)
151000 PSI		66000 PSI	58 %		1)A)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	%RA %RA	

Stress Rupture Temperature • Essai A Charge De Rupture Zeitstandversuch

Test Essai Versuch Temp:	Stress Constrainte Spannung	Hours Heures Stunden	% Elong In % Allong EN % Dehnung	% RA % RA	

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
97 HRBW		1)A)	4																			

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

10/7/2015

1) 2781571301

Jessica L. Holt

CERTIFICATION OF TESTS • RAPPORT D'ESSAIS CERTIFIE • WERKSZEUGNIS

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Kokomo, Indiana, 46902

MELT METHOD: ELECTRIC FCE/AOD/ESR. NO WELD REPAIRS PERFORMED. ROHS COMPLIANT.
COMPLIES WITH DFARS 252.225-7014 & 225.7002-3(1)(B) WR 2.4964
MATERIAL ONLY MEETS CHEMISTRY REQUIREMENTS PER NACE MRO 103 SECTION 3.1.1.1.1
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.
No welding performed on this material.
This material was melted and manufactured in the United States.
Stress rupture conformance is based on periodic tests (tenth heat) as described in paragraph 4.2.2.
This material is capable of meeting the stress rupture requirements of AMS 5759.
This material conforms to all technical requirements of AMS 5759.
Mill Orders Used: 2781571301 (2 PC)
A) 2150 °F to 2250 °F
Method of Chemistry Analysis for Heat# 51436 BUTT END *01: O.E. (P,Si); LECO (C,S); XARL LINFIT (Co,Cr,Fe,Mn,Ni,W);

Certified By • Certifie Par • Bescheinigt Durch: Jessica Holt 10/7/2015
Certification Technician

Jessica L. Holt

Haynes International, Inc.
1020 West Park Avenue
P.O. Box 9013
Kokomo, Indiana 46904-9013

Tel: 765-456-6000
FAX: 765-456-6905
www.haynesintl.com

November 28, 2017

Mr. John Vulchev
High Temp Metals
12500 Foothill Blvd.
Slymar, CA 91342-6038 USA

Dear John:

A new revision of AMS 5537 has been published which is now AMS5537™ Revision J. Any material that is certified by Haynes International, Inc. to AMS 5537 Revision H, also meets the requirements of AMS5537™ Revision J, with the possible exception of any marking which was done to Revision H.

Please let me know if you have any questions.

Sincerely,

Leslie Labig
Senior Quality Engineer

cc: Larry Tuff
Jose Rios
Jeff Sipf