

CERTIFICATION OF TESTS • RAPPORT D'ESSAIS CERTIFIÉ • WERKSZEUGNIS																			
Sales Order No Reference Commande Bestellungs Nr 815713001-0	Date Entered Date De Commande Bestelldatum 07/20/15	Customer Reference Reference Client Kundenbestelldaten 8248	Report No. Rapport No Zeugnis Nr 20151007025	Pages of Pages Page de Pages Anzahl der Seiten 1 Of 3															
Sold To • Client • Bestellanschrift		Ship To • Destinataire • Bestellmenge																	
Specification • Spezifikation		Quantity Ordered Quantité Commandée Bestellmenge 2 PC	Quantity Shipped Quantité Expédiée Liefermenge 2 PC																
AMS 5537, H; RR9000-SABRe; AMS 5759, L																			
Heat Number Numero De Qualite Charge Nr 1860 5 1436	Al	B	C	Cr-Ti (Nb-Ti)	Co	Cr	Cu	Fe	Mn	Mo	Ni	P	S	Si	Ti	V	W		
			0.109		BAL	20.50		2.50	1.52		10.10	0.007	<0.002	0.25				14.80	BUTT END *01
1860 5 1436	CON	Ta	Zr	Bi	Se	La	CNCB9	Pb	Mg	Y	Ag	N	Ca	Al-Ti	Ni+Co	Ni+Mo		BUTT END *01	

Certified By • Certifie Par • Bescheinigt Durch: Jessica Holt

Certification Technician

10/7/2015

Jessica J. Holt

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Sales Order No 815713001-0		Date Entered 07/20/15	CERTIFICATION OF TESTS • RAPPORT D'ESSAIS CERTIFIÉ • WERKSZEUGNIS		Report No. 20151007025	Pages of Pages 2 Of 3
Reference Commande Bestellungs Nr		Customer Reference Kundenberichtsdaten	Customer Reference Kundenberichtsdaten		Report No. 20151007025	Pages of Pages 2 Of 3

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

13042

Tensile Test at Room Temperature • Essai De Traction A Temp. Ambiante • Zugversuch				Tensile Test at Elevated Temperature • Essai De Traction A Hie. Temp.				Stress Rupture Temperature • Essai A Charge De Rupture Zeitstandversuch					
Ultimate Zugfestigkeit	1% Yield Lim. Elast. A 1% 1% Streckgrenze	0.2% Yield Lim. Elast. A 0.2% 0.2% Streckgrenze	% Elong In % Allong EN % Dehnung	% RA	Test Essai Versuch	Temp.	Ultimate Zugfestigkeit	1% Yield Lim. Elast. A 1% 1% Streckgrenze	0.2% Yield Lim. Elast. A 0.2% 0.2% Streckgrenze	% Elong In % Allong EN % Dehnung	% RA	Test Essai Versuch	Temp.
157000 PSI 151000 PSI	67000 PSI 66000 PSI	49 % 58 %	38 % 38 %	1(A)/L 1(A)/T									

Aged Hardness Durete Vieilli Gealtert Haerte				Grain Size Grosneur De Grain Korngrösse				IGA		Corrosion Rate		Oxidation Rate		Charpy Impact Test				Creep Rupture			
97 HRBW	1(A)	4		Grain Size Predominant Grain Size	Recy. Grain Grain %	ALA Pigme 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	Hours Heures Stunden	% Elong In % Allong EN % Dehnung	% Elong @ 15 Hrs		

1) 2781571301

10/7/2015

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

*Jessica D. Holt*

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## CERTIFICATION OF TESTS • RAPPORT D'ESSAIS CERTIFIÉ • WERKSZEUGNIS

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815713001-0	07/20/15	8248	20151007025	3 Of 3

MELT METHOD: ELECTRIC FCE/AOD/ESR. NO WELD REPAIRS PERFORMED. ROHS COMPLIANT.

COMPLIES WITH DFARS 252.225-7014 &amp; 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.

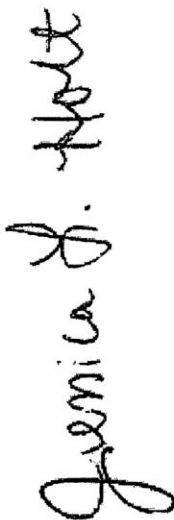
Mill Orders Used: 2781571301 (2 PC)

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);

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10/7/2015



# **HAYNES** International

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November 28, 2017

Mr. John Vulchev

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