



ASA PO 77667 WO 5857 CPA 16 RTJ 80 (2pc)

CARRS STAINLESS STEELS

A Division of ELG Haniel Metals Ltd.
Wadsley Bridge, Sheffield, S6 1LL, England

CD22310

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Purchaser - Besteller - Acheteur ESP Specialty Steel Products 7404 Railhead Lane Houston TX 77086 USA	Inspection Certificate: Abnahmeprüfzeugnis: Certificat de reception:	DIN 50049 3.1 EN 10204	Cert No: Zeugnis Nr: Cert No:	131117-b	Date: Datum: Date:	07/08/12
	Customer Order No: Kundenbestellnummer: No. de Commande Client:	P01978	Product Description - Beschreibung des Erzeugnisses - Description du Produit: 22.125in Dia. x 16500lbs Electric Melt & Vacuum Degassed Stainless Steel Solution Annealed Forged SS1 REV 5 316/316L/F316/F316L ASTM A276, A479, A182/SA182, A484, ASME SA479, SA193/A193 B8M CL1 SAE AMS-QQ-S-763B, AMS 5653, AMS 5648, NACE MR0175, NACE MR 0103			
	Our Order No: Unsere Auftr.-Nr: notre Comm. No:	48554 W135617/00	17196 LB 7800 Kgs.			

ok
2/22/13

Chemical Analysis - Chemische Analyse - Analyse Chimique													
Cast No Schmelznummer No. de Coulee	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	N	Co		
Heat # CD22310	.029	.36	1.41	.032	.029	16.77	2.06	10.59	.30	.027	.19		

Heat Treatment - Wärmebehandlung - Traitement Thermique Solution annealed @ 1060 C for 4 hours & Water Quenched

Mechanical Properties - Mechanische Eigenschaften - Caracteristiques Mechanique										
Test No Probe Nr No. d'Essai	Test dimension Probeabmessung Dimension	Proof Stress Streckgrenze Limite d'Elasticite 0.2%	Rp 1.0%	Tensile strength Zugfestigkeit Resistance a la traction	Elong % A Bruchdehnung % Allongement % Lo 5D dD	Red of Area % Z Bruchschmürung % Striction %	Impact Kerbschlagzähigkeit Resilience	Hardness Harte Durete		
214759	22.125"	L	233 MPa	266 MPa	520 MPa	61 %	67 %	76 %	127 HB	1

This report is a copy of original mill certificate and verifies that the product meets the requirements as originally ordered by Energy Steel Products.
DATE: 2-11-13 VERIFIED BY: [Signature]

Remarks - Bemerkungen - Remarques

Ultrasonically tested to ASTM A388 and found satisfactory
 Intercrystalline corrosion test to ASTM A262:E satisfactory
 Grain size to ASTM E112 - 0
 Hot Working Reduction - 1:2.42
 No welding performed
 No contact with Mercury or radioactive elements
 22" nominal size
 Material meets the requirements of NACE MR0103:2012
 Material meets the requirements of NACE MR0175:2009

SV
[Signature]



The material detailed has been manufactured and tested in accordance with the Quality Assurance system ISO 9001:2008 and the requirements of the specification/ order.

Signed: [Signature]
Chris Ryall - Quality Manager



Approved signatory for ELG Carrs Stainless Steels