

C116277

HT# CD23693



CARRS STAINLESS STEELS
A Division of ELG Haniel Metals Ltd.
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Purchaser - Baselaar - Acheteur ESP Specialty Steel Products 7404 Railhead Lane Houston TX 77088 USA	Inspection Certificate: Abnahmeprüfzeugnis: Certificat de réception:	DIN 50049 3.1 EN 10204	Cert No: Zeugnis Nr: Cert No:	137355	Date: Datum: Date:	02/01/14	
	Customer Order No: Kaufauftragsnummer: No. de Commande Client:	PO2879		Product Description - Beschreibung des Erzeugnisses - Description du Produit: 19.125in Dia, x 11000 lbs Electric Melt & Vacuum Degassed Stainless Steel Solution Annealed Forged SS1 REV 5 316/316L/F316/F316L ASTM A276, A478, A192/SA182, A484, ASME SA479, SA193/A193 B2M CL1 SAE AMS-QQ-S-763B, AMS 5663, AMS 5648, NACE MR0175, NACE MR 0103			
	Our Order No: Unsere Auftr.-Nr: notre Comm. No:	51466		W141237/00			

Chemical Analysis - Chemische Analyse - Analyse Chimique												
Test No Scheinheitsnummer No. de Coulee	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	N	Co	
CD23693	.012	.524	1.46	.024	.021	16.88	2.27	10.11	.183	.029	.141	

Heat Treatment - Wärmebehandlung - Traitement Thermique
Solution annealed @ 1940 F for 3 hours & Water Quenched

Mechanical Properties - Mechanische Eigenschaften - Caracteristiques Mechanique									
Test No Probe Nr No. d'Essai	Test dimension Probabmessung Dimension	Proof Stress Streckgrenze Limite d'Elasticite 0.2%	Rp 1.0%	Tensile strength Zugfestigkeit Resistance a la traction	Elong % A Bruchdehnung % Allongement % Lo SD 4D	Red of Area % Bruchdehnung % Striction %	Z Bruchdehnung % Striction %	Impact Kerbschlagzähigkeit Resilience	Hardness Harte Durete
260765	19.125"	241 MPa	272 MPa	526 MPa	63 %	68 %	75 %		133 HB

Remarks - Bemerkungen - Remarques

Ultrasonically tested to ASTM A388 and found satisfactory
 Inter-crystalline corrosion test to ASTM A262: A satisfactory
 Inter-crystalline corrosion test to ASTM A262: A satisfactory
 Grain size to ASTM E112 - Av2
 Microstructure and macrostructure see attached sheet.
 No welding performed
 No contact with Mercury or radioactive elements
 Nominal Size = 19" dia
 Hot Working Reduction - 3.19:1
 Material produced by ELG Carrs Stainless Steels in the United Kingdom

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: *C. Ryall*
 Chris Ryall - Quality Manager



Approved signatory for
 ELG Carrs Stainless Steels