

Thyssen Krupp      Part 79975      Woff 6750      CPA 16 F0E 40      1pc 020.125"      2.750" thick



**CARRS STAINLESS STEELS**  
 A Division of ELG Haniel Metals Ltd.  
 Wadley Bridge, Sheffield, S6 1LL, England

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Product - Hersteller - Anbieter ESP Specialty Steel Products 7404 Redwood Lane Houston TX 77058 USA	Material Certificate Reference Number 1 EN 10294	Designation D9N S9049 3.1 EN 10294	Certificate 144559	Date 14/10/15
Customer Order No. PO4127	Order Reference No. in Commercial Code	Product Description - Beschreibung und Bezeichnung 20 125h Dia. x 14200 lbs Electric Mill & Vacuum Degassed Stainless Steel	Certificate 144559	Date 14/10/15
Our Other Lic. License No. for other Countries	54822 W14748200	Product Description - Beschreibung und Bezeichnung 20 125h Dia. x 14200 lbs Electric Mill & Vacuum Degassed Stainless Steel SS1807 ASTM A276/A277/A278/A282/A285/A290/A292/A297/A298/A299 ASME SA276/SA277/SA278/SA282/SA285/SA290/SA292/SA297/SA298/SA299 AMS 5853, AMS 5949, UNS S30400, UNS S30403	Certificate 144559	Date 14/10/15

**Chemical Analysis - Chemische Analyse - Analyse Chimique**

Chemical Symbol Mn. of Element	C	Si	Mn	P	S	Cr	Mo	Ni	Cu	N	Co
H7#											
0026498	.022	.40	1.48	.037	.021	16.57	2.07	10.08	.40	.071	.20

Heat Treatment - Wärmebehandlung - Traktament Thermique      Solution annealed @ 1840 F for 5 hours & Water Quenched

**Mechanical Properties - Mechanische Eigenschaften - Caractéristiques Mécaniques**

Testing Method No. of Trials	Test direction Tensile Direction	Proof Stress Yield Strength 0.2%	R <sub>p</sub>	Tensile strength Tensile Strength	Elong. % A 50-52	Red of Area % Z Reduction	Impact Charpy Pendulum Transition Temperature	Hardness HRC
NR0731	L	284 MPa	313 MPa	548 MPa	57.5 %	61.5 %	78 %	191 HB

Parameters - Sonderregeln - Parameter

Ultrasonically tested to ASTM A398 and found satisfactory  
 Intergranular corrosion test to ASTM A262E satisfactory  
 Hydrochloric acid corrosion test to ASTM A262A satisfactory  
 Grain size to ASTM E112 - 00  
 Macrostructure and microstructure see attached sheet  
 No welding performed  
 No contact with Mercury or radioactive elements  
 Nominal Size = 20" dia  
 Material Produced by ELG Carrs Stainless Steels in the United Kingdom  
 Hot Working Production - 2.5:1

This report is a copy of original  
 test certificate and verifies  
 that the product meets the  
 requirements as originally  
 ordered by Frengy Steel Products.  
 DATE: 11/11/15      VERIFIED BY: EA

ok  
 i-C  
 10/19/16

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: *CPH*  
 Chief Agent - Quality Manager

Approved signature for  
 ELG Carrs Stainless Steels