



Tel. (+39)(030)5829911  
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 Via Industriale, 1 - 25021 BAGNOLO MELLA (BS) ITALY

**CERTIFICATE OF QUALITY AND MATERIAL TESTING**

INSPECTION CERTIFICATE N. **AC/ 2293** DATE: **27/08/16**  
 according to EN 10204.3.1

FIRM: **ESP SPECIALTY STEEL PRODUCTS - HOUSTON (TX)**  
 ORDER: **P04405** ORDER CONFIRMATION: **204188**

HEAT	N. of PCS	MATERIAL DESCRIPTION	MATERIAL GRADE
58408	2	FORGED ROUND PEELED BARS Ø9"  Lbs 2590,434 x 11,414 feet Lbs 2581,774 x 11,309 feet  This report is a copy of the original Mill certificate and verifies that the product meets the requirements as originally ordered by ESP Specialty Steel Products LLC Date: <u>7/13/16</u> Verified <u>VT</u>	316/316L UNS S31600 /S31603 SS1 Rev.5 ASTM A276-16a ASTM A479-16a ASTM A484-15 ASME Code Sec.II Part. A SA479-15 NACE MR 0103-12 NACE MR 0175/ISO 15156-2015 ✓ AMS 5653H AMS QQS 763B Cond.A AMS 5648L AMS S-7720 316

H.T. CONDITION: Solution annealed 1050°C (4h) + water quenched

**HEAT ANALYSIS**

C	Mn	Si	P	S	Cr	Ni	Mo	Cu	Sn
0,014	1,78	0,27	0,028	0,0250	17,00	10,38	2,10	0,318	0,0075
Ca	Al	V	Ti	W	Ta	As	Co	Nb	Pb
0,0038	0,005	0,046	0,002	0,027	0,005	0,008	0,114	0,054	0,0058
B	N	Zr	Sb	Fe	PRE	Ferrite (%) ASTM E562		Grain size ASTM E112	
0,0002	0,075							5	

**TEST RESULTS ON ACTUAL BAR PROLONGATION**

Temp. [°C]	Direction	R <sub>p0.2</sub> [KSI]	R <sub>m</sub> [KSI]	A [%]	Z [%]	KV (10 X 10 mm) [J]	Hardness
RT	L	37	80	54,8	54,3		HBw 165 HRC 3

Steelmaking process: E.A.F. + A.O.D. refining  
 No welding performed on material  
 Material free from Mercury contamination  
 Material inspected with a gamma spectrometer and with no radioactive contamination beyond the limits provided for by the EU-Radiation Protection 122- part 1, when relevant  
 Mechanical tests performed according to ASTM A370-14 (Ø12,5mm-50mm length) + ASTM E10-14 + ASTM E18-14a  
 Corrosion test according to ASTM A262 Pr.E satisfactory performed  
 Chemical analysis and mechanical properties according to ASTM A182-16-ASME SA182-15 - ASTM A193-16 -ASME SA193-15  
 Grade B8M Class 1  
 Country of melt and country of manufacture: Italy  
 Italfond is in compliance with DFARS regulation 252.225-7017  
 Forging ratio ≥3:1  
 PMI performed

SURVEYORS	CUSTOMER INSPECTION	ITALFOND S.p.A. Quality Assurance
		 <b>GARANZIA QUALITA'</b>

5 pcs  
 6308 CPA 6 FOR 55 90  
 169 #can  
 Thyssenkrupp

Dec 16/16 Isaac  
*Tomas Sanchez*

From: TK Materials CA, Ltd.  
 Cust. NEXXA INDUSTRIES LTD  
 CstAr  
 Wgt.: 216.980 LB  
 Del.: 2404936670  
 CstOr 80049  
 Date 12/15/2016



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**CERTIFICATE OF QUALITY AND MATERIAL TESTING**  
**MICROGRAPHIC EXAMINATION**

INSPECTION CERTIFICATE N. **ME/ 2293** DATE: **27/06/16**  
 according to EN 10204.3.1

FIRM: **ESP. SPECIALTY STEEL PRODUCTS - HOUSTON (TX)**

ORDER: **P04405** ORDER CONFIRMATION: **204188**

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H.T. CONDITION : Solution annealed 1050°C (4h) + water quenched

**MICROGRAPHIC EXAMINATION - MID RADIUS**

Magnification: 100 x  
 Etching: electrolytic, Oxalic Acid 3V-90s according to ASTM E407.



RESULT: Homogeneous structure free from detrimental phases and precipitates

SURVEYORS	CUSTOMER INSPECTION	ITALFOND S.p.A. Quality Assurance
		 GARANZIA QUALITÀ

6700 ASD 1769 from

From: TK Materials CA, Ltd.  
 Cust. NEXXA INDUSTRIES LTD  
 CstAr

Del.: 2404936670  
 CstOr 80049  
 Date 12/15/2016

*Tomas Sanchez*



Tel. (39)(030).6829911  
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**CERTIFICATE OF QUALITY AND MATERIAL TESTING**

**MACROGRAPHIC EXAMINATION**

INSPECTION CERTIFICATE N. **ME2/ 2293** DATE : **27/06/16**  
 according to EN 10204.3.1

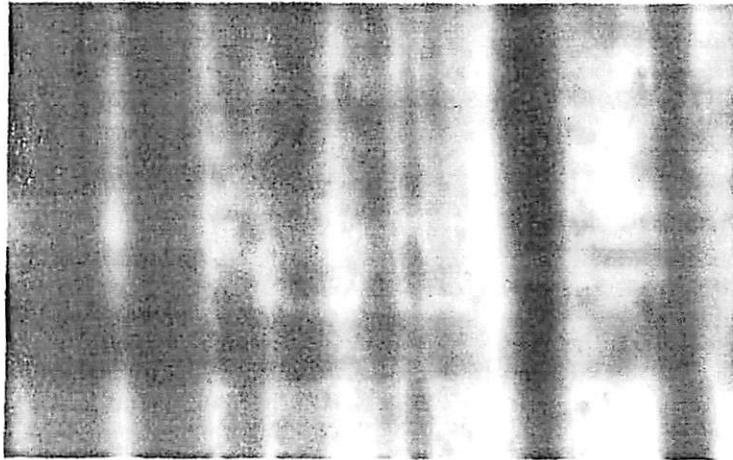
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**MACROGRAPHIC EXAMINATION**

Etching: 50% H<sub>2</sub>O + 50% Hcl



SURVEYORS	CUSTOMER IN CHARGE	ITALFOND S.p.A. Qual Assurance ITALFOND STAINLESS STEEL AND SUPERALLOYS "RAI" A QUALITÀ

W.O.# 6971 P.O.# 80049

From: ~~TK Materials CA, Ltd.~~  
 Cust. NEXXA INDUSTRIES LTD  
 CstAr  
 Wat.: 216.980 LB

Del. 404936  
 CstOr 81049  
 Date 12/15/2016

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