

W0464A

6"340

70 pcs

E89081



Certificate of Test

CERTIFICATION

HEAT E89081 ORDER 600560/ 09 BOL 0202.017 BUNDLE 2001797/1B 04/13/09

SHIP TO: ROLLED ALLOYS BAR CENTER 711 PHOENIX LAKE AVENUE

STREAMWOOD 601070000

YOUR ORDER & DATE 4/13/09 CUST# 0773001 CUST TAG#835046008001-07

ITEM DESCRIPTION Ship Condition CONDA GRADE 316L/316 Size 316L RND ART CONDA 9.0000 x 144.000-168.00 Country of Melt: UNITED KINGDOM Country of Mfg.: SWEDEN Country of Origin is Country of Melt

No weld repair Free of mercury contamination, Free of Radiation Contamination No WEEE Relevant Substances; Meets EU Electrical ROHS

Total Bundles 1 Bundle Weight 2918

SPECIFICATIONS AMS 5648K, 5653F SAE AMS-QQ-S-763B ASME SA182 E07 ASME SA193 E07 ASME SA479 E07, A07 & A08 ASME SA320 B8M CL1 E04 A05 ASTM A182 07A ASTM A262 02A PRACTICE A/E ASTM A276 08 ASTM A314 97 ASTM A479/A479M 06A ASTM A484 06B ASTM A320 04 B8M CLASS 1 ASTM A193 07 B8M NACE MR0175-03, ISO 15156:03 DFARS 252.225.7014 6/05 FEDERAL SPEC. QQ-S-763F UNS S31600, AISI 316 UNS S31603, AISI 316L PRODEC QUALITY BS EN 10204 TYPE 3.1 RA-53 RAM 316L SOL ANN 1832F MIN/RAPID COOL

MECHANICAL & OTHER TESTS Hardness as shipped (134 HB ) Hardness as shipped 73 HRB Grain size 5.0 Tensile strength, KSI (MPa) 82.0 ( 565) Micro OK 0.2% Yield Strength, KSI (MPa) 31.0 ( 214) Intergranular corrosion OK Elongation % in 4D 58.0 Macro OK Reduction of area % 76.0 Charpy (ft lb) 0 0 0 Avg 97

CHEMICAL COMPOSITION Carbon (C) .026 Manganese (Mn) 1.560 Phosphorus (P) .029 Sulphur (S) .019 Silicon (Si) .390 Chromium (Cr) 16.870 Nickel (Ni) 10.950 Cobalt (Co) .194 Copper (Cu) .293 Moly (Mo) 2.170 Nitrogen (N) .070 Columbium (Cb) .016 Titanium (Ti) .001 Aluminum (Al) .004 Tin (Sn) .008 Boron (B) .001 Tantalum (Ta) .006 Vanadium (V) .060 Columbium/ Tantalum (Cb+Ta) .022 Iron (Fe) Balance Melt Practice EAF Refining Practice AOD De-long Ferrite

ROLLED ALLOYS QUALITY ASSURANCE APPROVED DATE

REC# 186769

LC NO

Knowingly & willfully falsifying or concealing a material act on this form, or making false, fictitious or fraudulent statements or representations herein could constitute a felony punishable under federal statutes.

We hereby certify that the test results shown in this report are correct and accurate as contained in the records of the company and are in compliance with the specifications, codes, and standards listed above.

Outokumpu 3043 Crenshaw Pkwy. Richburg, SC 29728

M. E. Marciano Quality Manager

M. E. Marciano