

E 111145

113"

OUTOKUMPU

Certificate of Test

Roller Alloys #0 46585 W05548 C/A 4-40

HEAT E111145

ORDER 625761/ 01 BOL 0214077 * CERTIFICATION * 09/29/11

SHIP TO:
ROLLED ALLOYS BAR CENTER
711 PHOENIX LAKE AVENUE

STREAMWOOD 601070000

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11/15/11

----- YOUR ORDER & DATE -----
I03209 9/29/11 CUST# 0773001 CUST TAG#835045901001-01

----- ITEM DESCRIPTION -----
GRADE 316L/316 Ship Condition CONDA
Size 316L RND HRART CONDA 6.2500 x 144.000 RL
Country of Melt: UNITED KINGDOM Country of Mfg.: SWEDEN
NAFTA 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 3 Total Weight 8085

WO 2023106 Bundles: 1J, 1K, 1L

AMS 5648K, 5653G
ASME SA182 E07-E10, Add. 11a
ASME SA479 E07-E10 A11a
ASTM A182 10a
ASTM A276 10
ASTM A479/A479M 11
ASTM A320-11 B8M Class 1
NACE MR0175-03 ISO 15156:03
Federal Spec QQ-S-763F
UNS S31603 AISI 316L
EN 10204 Type 3.1 Document
EN 10272 GR 1.4404 chemistry

----- SPECIFICATIONS -----
SAE AMS-QQ-S-763B
ASME SA193 E10 A11a
ASME SA320 B8M CL1 E10 A11a
ASTM A262 10 Practice A/E
ASTM A314 97
ASTM A484 11
ASTM A193 11 B8M
DFARS 252.225.7014 6/05
UNS S31600, AISI 316
Prodec Quality
RA-53 RAM 316L
Process Annealed 1750F min

HEAT # E111145
HRCLER 246 126

----- MECHANICAL & OTHER TESTS -----
Hardness as shipped (146 HB)
Hardness as shipped 77 HRB
Grain size 4.5
Micro OK
Intergranular corrosion OK
Tensile strength, KSI (MPa) 82.7 (570)
0.2% Yield Strngth, KSI (MPa) 34.2 (236)
Elongation % in 4D 56.0
Reduction of area % 75.0

----- CHEMICAL COMPOSITION -----
Carbon (C) .018
Phosphorus (P) .033
Silicon (Si) .278
Nickel (Ni) 10.120 ✓
Copper (Cu) .413
Nitrogen (N) .081
Titanium (Ti) .002
Tin (Sn) .010
Vanadium (V) .060
Columbium/
Tantalum (Cb+Ta) .010
Iron (Fe) Balance
Melt Practice EAF
Refining Practice AOD
De-long Ferrite
Manganese (Mn) 1.640
Sulphur (S) .026
Chromium (Cr) 17.160 ✓
Cobalt (Co) .206
Moly (Mo) 2.040 ✓
Columbium (Cb) .010
Aluminum (Al) .005
Boron (B) .005
.000

APPROVED FOR QUALITY ASSURANCE
DATE 10/11/11
11-11-11

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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.

M.F. Marcanio, Quality Manager

M.F. Marcanio