

Certificate of Test
E131213 (14")

C101112

Page: 1

HEAT E131213 ORDER 649363/ 07 BOL 0226629 * CERTIFICATION * 03/17/14

SHIP TO:
ASA ALLOYS EDMONTON
20 CHALLENGER CRESCENT
SHERWOOD PARK
ALBERTA T8H 2R1 000000000

----- YOUR ORDER & DATE -----
P032661 3/17/14 CUST# 1550000 CUST TAG#

----- ITEM DESCRIPTION -----
GRADE 316L Ship Condition CONDA
Size 316L RND HRART CONDA 14.0000 x 144.000 RL
Country of Melt: UNITED KINGDOM Country of Mfg.: UNITED KINGDOM
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 1 Total Weight 5494

WO 2047557 Bundles: 1A

----- SPECIFICATIONS -----
AMS 5648L, 5653H SAE AMS-QQ-S-763C
ASME SA182 2007-2013 Ed ASME SA193 B8M CL1, 2013 Ed.
ASME SA479 2007-2013 Ed. ASME SA320 B8M CL1, 2013 Ed.
ASTM A182 13a ASTM A193 12b B8M Class 1D
ASTM A262 98 Practice E ASTM A276 13a
ASTM A479/A479M 13b ASTM A320 11 B8M Class 1
ASTM A 182-82-97C DIN 50049/EN 10204 Type 3.1
Federal Spec QQ-S-763F Federal Spec QQ-S-763E AM 1
Prodec Quality NACE MR0175-09, ISO 15156:09

----- MECHANICAL & OTHER TESTS -----
Hardness as shipped (153 HB)
Hardness as shipped 80 HRB
Grain size 4.5 Tensile strength, KSI (MPa) 79.5 (548)
Micro OK 0.2% Yield Strngth, KSI (MPa) 35.7 (246)
Intergranular corrosion OK
Elongation % in 4D 61.6
Reduction of area % 75.0

----- CHEMICAL COMPOSITION -----
Carbon (C) .019 Manganese (Mn) 1.620
Phosphorus (P) .034 Sulphur (S) .024
Silicon (Si) .410 Chromium (Cr) 16.740
Nickel (Ni) 10.260 Cobalt (Co) .212
Copper (Cu) .430 Moly (Mo) 2.070
Nitrogen (N) .082 Columbium (Cb) .012
Titanium (Ti) .002 Aluminum (Al) .005
Tin (Sn) .010 Tantalum (Ta) .001
Vanadium (V) .040 Tungsten (W) .069
Columbium/
Tantalum (Cb+Ta) .013
Iron (Fe) Balance
Melt Practice EAF
Refining Practice AOD
De-long Ferrite .8

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