



Certificate of Test E101213.

PO 76022
Copper + Brass
WO 5452
CPA-NPS 0/40

33 pcs

HEAT E101213 ✓ ORDER 615566/ 02 BOL 0212022 * CERTIFICATION * 05/13/11

SHIP TO:
COPPER AND BRASS SALES
10648 WEST LITTLE YORK
SUITE 400
HOUSTON 770410000

----- YOUR ORDER & DATE -----
5400071876 5/13/11 CUST# 0316001 CUST TAG#SSRD00244

----- ITEM DESCRIPTION -----
GRADE 316L/316 ✓ Ship Condition CONDA
Size 316L RND HRART CONDA 11.0000 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 4112

WO 2022241 Bundles: 1B

----- SPECIFICATIONS -----
AMS 5648K, 5653F SAE AMS-QQ-S-763B
ASME SA479 E07, A07-09, E10 ASTM A182 10a
ASTM A262 10 Practice A/E ASTM A276 10
ASTM A479/A479M 10a ASTM A484 11
ASTM E112 96 ASTM A320 10a B8M Class 1
ASTM A193 10a B8M DIN 50049/EN 10204 3.1B ✓
DFARS 252.225.7014 6/05 Federal Spec QQ-S-763F
✓ NACE MR0175-03, mid-rad hard

----- MECHANICAL & OTHER TESTS -----
Hardness as shipped (143 HB)
Hardness as shipped 77 HRB
Grain size 4.5 Tensile strength, KSI (MPa) 79.0 (545)
Micro OK 0.2% Yield Strngth, KSI (MPa) 32.7 (225)
Intergranular corrosion OK
Elongation % in 4D 58.0
Reduction of area % 78.0

----- CHEMICAL COMPOSITION -----
Carbon (C) .016 Manganese (Mn) 1.610
Phosphorus (P) .035 Sulphur (S) .024
Silicon (Si) .307 Chromium (Cr) 16.830
Nickel (Ni) 10.180 Cobalt (Co) .151
Copper (Cu) .424 Moly (Mo) 2.020
Nitrogen (N) .081 Columbium (Cb) .015
Titanium (Ti) .002 Aluminum (Al) .004
Tin (Sn) .011 Tantalum (Ta) .004
Vanadium (V) .060 .000
Columbium/
Tantalum (Cb+Ta) .019
Iron (Fe) Balance
Melt Practice EAF
Refining Practice AOD
De-long Ferrite

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

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