

HEAT E151086 ORDER 661560/ 12 BOL 0234035 * CERTIFICATION * 11/25/15

SHIP TO:
ROLLED ALLOYS INC.
9818 EAST HARDY ROAD

HOUSTON 770930000

----- YOUR ORDER & DATE -----
0128679-HOU 8/21/15 CUST# 0773001 CUST TAG#0010282

----- ITEM DESCRIPTION -----
GRADE 2205/2205+2 Ship Condition CONDA
Size 2205 RND HRART CONDA 5.0000 x 144.000 RL
Country of Melt: UNITED KINGDOM Country of Mfg.: UNITED STATES
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 2 Total Weight 7080 Approx. Hot Red. Ratio 8:1

WO 2064633 Bundles: 1A, 1B

----- SPECIFICATIONS -----
MFG TO FINISHED BAR IN THE USA FROM BILLETS IMPORTED UNITED KINGDOM
ASME SA479 2007-2015 Ed. ASME SA182 F51 Chem, 2015 Ed
ASTM A276-15 ASTM A479/A479M 15
ASTM A923 14 Method A ASTM A182 15 F51 chemistry
ASTM A923 14 Method B ASTM A923 14 Method C
ASTM E562 met point count DIN 50049/EN 10204 Type 3.1
Sol Ann @1950F/hold 45min/WQ NACE MR0175-09, ISO 15156:09
UNS S31803, AISI 2205 UNS S32205, AISI 2205
DFARS 252.225.7009 10/4/11 EN 10204 Type 3.1 Document
ASTM G48 11 Method A ASME SA276, 2015 Ed.
QTC is a prolongation of bar EN 10204 Type 3.1 Document
NACE MR0103-10

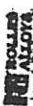
----- MECHANICAL & OTHER TESTS -----
Hardness as shipped 213 HB
Hardness as shipped (94 HRB)
Micro OK Tensile strength, KSI (MPa) 106.0 (731)
Intergranular corrosion 0.2% Yield Strngth, KSI (MPa) 79.5 (548)
Elongation % in 4D 42.0
Reduction of area % 79.0
Corrosion Rate (mdd) .0 Charpy (ft lb) 122 124 142 Avg 129
Charpy Test Temperature - 50F (- 46C)
Lateral Exp (mils) 90 81 84 Avg 85
Ferrite 48.0
ASTM A923 Method C: No pitting, no mass loss
ASTM A923: no evidence of intermetallic phases, Unaffected Structure

-- Continued --

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TRACER # 0001651ED

 ROLLED ALLOYS

M.F. Marciano



Certificate of Test

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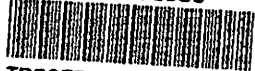
HOUSTON 770930000

----- CHEMICAL COMPOSITION -----			
Carbon (C)	.020	Manganese (Mn)	1.210
Phosphorus (P)	.022	Sulphur (S)	.001
Silicon (Si)	.460	Chromium (Cr)	22.240
Nickel (Ni)	5.550	Cobalt (Co)	.326
Copper (Cu)	.120	Moly (Mo)	3.230
Nitrogen (N)	.182	Columbium (Cb)	.010
Titanium (Ti)	.003	Aluminum (Al)	.005
Tin (Sn)	.003	Boron (B)	.001
Tantalum (Ta)	.003	Vanadium (V)	.120
Tungsten (W)	.040		.000
Columbium/ Tantalum (Cb+Ta)	.013		
Iron (Fe)	Balance		
Melt Practice	EMF		
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. Marcano, Quality Manager

RECEIVED
ROLLERS
ALLOYS
RECEIVING INSPECTION
By: *JUAN*
Date: *02/16/16*

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M.F. Marcano