



Certificate of Analysis and Tests

852505-1A

OUR ORDER 0277161 - 01 **HEAT & PIECE 852505-1A** 10/28/11

SOLD TO: ROLLED ALLOYS
P O BOX 310

SHIP TO: ROLLED ALLOYS INC
9818 EAST HARDY ROAD
PH: 713-691-4967
HOUSTON

TEMPERANCE

MI 48182

TX 77093

----- YOUR ORDER & DATE -----
J16761 8/04/11 TAG# 3903-4399-02-1

----- ITEM DESCRIPTION -----
HEAT & PIECE 852505 - 1A
WEIGHT 9332
FINISH 1
GRADE 2205+2 / 2205 UNS-S32205 / UNS-S31803
DIMENSIONS 1.750 X 96.000 X 190.000 EXACT

----- SPECIFICATIONS -----
*** MFG IN NEW CASTLE, IN, USA FROM SLABS IMPORTED FROM BRITAIN
ASTM A240-11A ASME SA240-10E ASTM A480-11A ASMESA480 10ED
ASTM A 923-06 METH A,B,& C REFINED A.O.D. PROCESS
MELTED ELECTRIC ARC METHOD NACE MRO175-2003/ISO 15156
UHA 51 CHARPY @ -40F (-40C) ROLLED ALLOYS SPEC 2205+2
CONTAINS 40% TO 60% FERRITE E562 POINT CT FERRITE 40-50%
NAFTA CTRY ORIGIN= SLAB CTRY MEETS EU ELECTRICAL ROHS
LIST HEAT/PCE/SIZE ON INVCE EXXONMOBIL DSS1R10 R7 W/EXCP

PLATES & TEST PCS SOLUTION ANNEALED @ 1950 DEGREES FAHRENHEIT MINIMUM.
THEN WATER QUENCHED
FREE FROM MERCURY CONTAMINATION AT CURRENT DETECTION LIMITS
HOT ROLLED, ANNEALED & PICKLED (HRAP)

----- MECHANICAL & OTHER TESTS -----

HARDNESS HRC 15
YIELD STRENGTH (PSI) 74338
TENSILE STRENGTH (PSI) 104070
ASTM A923 METHOD A OK
ELONGATION % IN 2" 35.4
REDUCTION OF AREA % 74.3
CHARPY TEST AT -40F (TRANS) 217 FT-LBS. SAMPLE SIZE FULL
A923 METHOD C CORROSION TEST M.D.D. = 0.00 @ 25 DEGREES C 24HRS
CHARPY TEST AT -40F (TRANS) 217, 244, 279 FT-LBS. FULL SAMPLE SIZE
SHEAR % = 100%, 100%, 100% LATERAL EXPANSION = 99, 103, 105 (MILS)
ASTM E-562 POINT COUNT FERRITE = 45% AT 10% RELATIVE ACCURACY
CALCULATED E-LONG = 34.1%

----- CHEMICAL COMPOSITION -----

CARBON	(C)	.018
MANGANESE	(MN)	1.50
PHOSPHORUS	(P)	.024
SULFUR	(S)	.001
SILICON	(SI)	.35
CHROMIUM	(CR)	22.36
NICKEL	(NI)	5.66
COBALT	(CO)	.08
COPPER	(CU)	.13
MOLY	(MO)	3.16
NITROGEN	(N)	.18
COLUMBIUM	(CB)	.008
TITANIUM	(TI)	.003
ALUMINUM	(AL)	.019
TIN	(SN)	.010
TANTALUM	(TA)	.008

Roller Alloys Quality Assurance

Approved *James Bell*

Date 10-31-2011

HEAT# 852505



TRACKER# 248495

WE HEREBY CERTIFY THAT THE MATERIAL HEREIN HAS BEEN MADE AND TESTED IN ACCORDANCE WITH THE LISTED SPECIFICATION(S) AND THAT THE RESULTS OF ALL TESTS ARE ACCEPTABLE.

JAMES DOUBMAN, QUALITY ASSURANCE MANAGER