

**OUTO  
KUMPU****Certificate of Analysis and Tests**

OUR ORDER 0249901 - 01

HEAT &amp; PIECE 832782-5A 02/20/06

SOLD TO: A. M. CASTLE & COMPANY  
3400 NORTH WOLF ROAD  
FRANKLIN PARK IL 60131SHIP TO: A. M. CASTLE METALS  
3400 NORTH WOLF ROAD  
847-455-7111  
FRANKLIN PARK IL 60131

## ----- YOUR ORDER &amp; DATE -----

01-10569

12/20/05

TAG# IAC 18490

## ----- ITEM DESCRIPTION -----

HEAT & PIECE 832782 - 5A  
WEIGHT 9621  
FINISH 1  
GRADE 316L / 316  
DIMENSIONS 2.750 X 96.000 X 125.000 EXACT  
UNS-S31603 / UNS-S31600

## ----- SPECIFICATIONS -----

*** MFG IN NEW CASTLE, IN, USA	FROM SLABS IMPORTED FROM BRITAIN
AMS 5507F EXCEPT LINE MARK	AMS 5524K EXCEPT LINE MARK
CASTLE SPEC# S31600-60 REV14	AMC S31603-60 R11 & 62 R16
ASTM A240-05	ASME SA312-04ED05AD CHEM ONLY
ASTM A479-04 CHEMISTRY ONLY	ASME SA240-04 EDITION 05 ADD
ASTM A480/A480M-04A	ASTM A276-04 COND A CHEM ONLY
ASTM A312-04B CHEMISTRY ONLY	ASTM A262-02A PRACTICE E
97/23/EC PED #224/2004/MUC	GLY-83463-1 R F W/EXCEPTION
CASTLE S31603-64 R2 W/EXCEPT	97/23/EC ANNEX 1 PARA 4.3
NO GRIPPER MARKS	NO WELD REPAIRS
ASTM A262-02A PRACTICE A	

PLATES & TEST PCS SOLUTION ANNEALED @ 1950 DEGREES FAHRENHEIT MINIMUM.  
THEN WATER COOLED OR RAPIDLY COOLED BY AIR  
FREE FROM MERCURY CONTAMINATION AT CURRENT DETECTION LIMITS  
HOT ROLLED, ANNEALED & PICKLED (HRAP) ISO 9001-2000

## ----- MECHANICAL &amp; OTHER TESTS -----

HARDNESS RB	81
GRAIN SIZE	3
YIELD STRENGTH (PSI)	43556
TENSILE STRENGTH (PSI)	79870
INTERGRANULAR CORROSION	OK
ELONGATION % IN 2"	47.0
REDUCTION OF AREA %	64.4

## ----- CHEMICAL COMPOSITION -----

CARBON (C)	.018
MANGANESE (MN)	1.50
PHOSPHORUS (P)	.030
SULFUR (S)	.023
SILICON (SI)	.53
CHROMIUM (CR)	16.72
NICKEL (NI)	10.11
COBALT (CO)	.25
COPPER (CU)	.47
MOLY (MO)	2.08
NITROGEN (N)	.05
COLUMBIUM (CB)	.022
TITANIUM (TI)	.003
ALUMINUM (AL)	.005
TIN (SN)	.009

CASTLE METALS FP  
DATE REC'D 2.27.06 IAC 18490  
APPROVED BY: [Signature]

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

CERTIFICATE IN CONFORMANCE WITH EN10204-95 3.1.B/EN10204-2004 3.1