



575 STATE FAIR BLVD.  
SOLVAY, NY 13209

# Certificate of Test

Cert Date: 12/11/15

REVISED COPY ORIGINAL SENT 05/05/15

S O L D T O	COPPER & BRASS SALES INC 22355 WEST ELEVEN MILE ROAD SOUTHFIELD, MI 48034	S H I P T O	COPPER & BRASS SALES 8001 THYSSENKRUPP PARKWAY NORTHWOOD, OH 43619	CIL ORDER NO. P5-10704-5-01
				HEAT NO. A13112

CIL INSIDE SALES REP. L HINMAN	SHIPPED FROM SOLVAY, NY USA	CUSTOMER P.O. 5400255451-R02	CUSTOMER PART NO. SSRD01610
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QUANTITY SHIPPED 6212 LBS.

### DESCRIPTION OF MATERIAL

CRU (316/316L) RTA SIZE 16.000 RD  
AMS-5648-L AMS-5653-H ASME SA-479-13ED ASTM-A276-13A ASTM-A388-11 /API6A PSL-3  
ASTM-A479-14 CBS 316LNACE-0 (EX. 3.2, 3.4, 5.2.1) (NACE MR0175/ISO 15156-3)

### CHEMICAL ANALYSIS

C	MN	P	S	SI	NI	CR	MO	CU	N
.017	1.77	.025	.024	.59	10.20	16.44	2.07	.25	.081

### AS SHIPPED PROPERTIES

HARDNESS

BHN 136

LONGITUDINAL

TENSILE PSI 76,280 GRAIN SIZE #3.0  
YLD. 2% PSI 36,700  
% ELONG4D 59.5  
RED/AREA% 74.0

THE REQUIREMENTS OF ASTM A262 PRACTICE E HAVE BEEN SATISFIED.

### AS SHIPPED MATERIAL CONDITION

MATERIAL ANNEALED AT 1950 DEG. F. - WATER QUENCHED.  
REDUCTION RATIO: 3.5:1

### ADDITIONAL MATERIAL STATEMENTS

MATERIAL MELTED BY ELECTRIC FURNACE AND ARGON OXYGEN DECARBURIZATION REFINED.  
ULTRASONIC PERFORMED TO ASTM-388/API6A - RESULTS ACCEPTABLE  
FURNACES SURVEYED ANNUALLY IN COMPLIANCE WITH MIL-STD-1684B & MIL-STD-1308C.

THANK YOU FOR SELECTING A QUALITY PRODUCT MANUFACTURED WITH PRIDE AT CRUCIBLE INDUSTRIES LLC LOCATED IN SOLVAY, NY 13209, USA. ALL MELTING DONE IN USA. WE PROVIDE MATERIAL THAT IS FREE FROM MERCURY CONTAMINATION AND RADIATION AT THE TIME OF SHIPMENT. NO WELD REPAIR IS DONE. CRUCIBLE INDUSTRIES LLC HOLDS A CERTIFICATE OF REGISTRATION TO ISO 9001:2008, PRESSURE EQUIPMENT DIRECTIVE (PED) 97/23/EC 7/2 ANNEX 1, PARAGRAPH 4.3 AND WORKS UNDER THE GUIDELINES OF NCA 3800 USING QP MANUAL DATED 1/27/15. WE ARE COMPLIANT WITH EU DIRECTIVE 2002/95/EC (ROHS), REACH, EN 10204 2004 3.1, AND DFARS 252.225.7001,7002,7008,7009 MATERIAL IS OF NAFTA ORIGIN. MATERIAL TESTING IS PERFORMED ON A PROLONGATION OF THE BAR, IN COMPLIANCE WITH INDUSTRY STANDARDS ASTM A370, E8, E10, E18, E23, E45, E112, E381, E604, E572, E1019, ANDE1086. THE RECORDING OF FALSE, FICTITIOUS OR FRAUDULENT STATEMENTS ON THIS DOCUMENT MAY BE PUNISHED AS A FELONY UNDER FEDERAL STATUTES, INCLUDING FEDERAL LAW, TITLE 18, CHAPTER 47 PRODUCTS, TECHNICAL DATA, TECHNOLOGY, AND SERVICES OF CRUCIBLE INDUSTRIES LLC ARE SUBJECT TO U.S. EXPORT CONTROLS UNDER THE APPLICABLE LAWS AND REGULATIONS OF THE UNITED STATES.

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED ACCORDANCE WITH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THE SPECIFICATION REQUIREMENTS.  
CRUCIBLE INDUSTRIES LLC

ROBERT TSCHERNJAWSKI - SPECIFICATION EXAMINER

WILLIAM MASTROE - MANAGER OF QUALITY AND PROCESS ENGINEERING