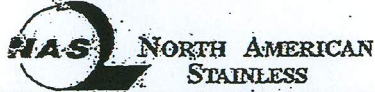


HT# M449

5400232074-9302665586



**METALLURGICAL TEST REPORT**

6870 Highway 42 East  
Ghent, KY 41045-9615  
(502) 347-6000

Certificate: 949781 01	Mail To: COPPER AND BRASS SALES, INC. ATTN: ACCOUNTS PAYABLE SOUTHFIELD MI 48086-	Ship To: COPPER AND BRASS SALES, INC. 13338 ORDEN DRIVE SANTA FE SPRINGS CA 90670	Date: 5/18/2014 Page: 1 Of 1 Steel: 316/316L Finish: Hot Finish Dia/Thk: 5.0000 in Leg Length: Length: 144.00 in Corrosion: ASTM A262 Prac. E OK
Customer: 0925 023			
NAS Order: LP 17411 1			
Your Order: 5400218055	Item Code:		

**PRODUCT DESCRIPTION:**

Round Bar, Hot Rolled, Annealed, Rough Turned  
UNS 31600/31603 EN 10204 3.1, ASTM A484/13a  
ASTM A276/13, ASTM A479/13a, ASTM A182/13 CHEM ONLY,  
ASME SA479/13, ASME SA182/10 CHEM ONLY, ASTM F899/11  
AMS 5648L/AMS 5653G, AMS QQS-763B, QQS 763F  
NACE MR0175/MR0103 (MID RADIUS ONLY),  
SOLUTION ANNEAL TEMP 1900F MIN, ASTM A320/08 CL 1 GR B8M  
ASTM A193/10A-ASME SA193/10 CL 1 GR B8M(EXC PAR 7.2)

**REMARKS:**

COMPLIES W/REQUIREMENTS OF DEAR 252.225-7009 EU DIRECTIVE  
2011/65/EU.ROHS. XAF+AOD+CC. NO WELD REPAIR. MELTED AND MFG  
IN USA FREE FROM MERCURY AND LOW MELTING ALLOY CONTAMINATION

Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight	Bundle Weight
BG34112	884	BG34113	1772						

**CHEMICAL ANALYSIS** CM(Country of Melt) ES(Spain) US(United States) ZA(South Africa) JP(Japan) Chemical Analysis per ASTM A751/08

Heat	Supplier #	CM	C %	CO %	CR %	CU %	MN %	MO %	N %	NI %	P %	S %
M449		US	.015	.31	16.59	.38	1.38	2.03	.051	10.53	.032	.0187
			SI %									
			.30									

**MECHANICAL PROPERTIES**

Id	HB	.2YS	UTS	RA	Elong	
o i	No.	KSI	KSI	%	% 4D	
BG34112	RL	143.0	41.00	82.00	60.00	54.00
BG34113	RL	143.0	41.00	82.00	60.00	54.00

NAS hereby certifies that the analysis on this certification is correct. Based upon the results and the accuracy of the test methods used, the material meets the specifications stated. These results relate only to the items listed on this report. For more information, contact the analyst or the manager of the laboratory.

Technical Dept. Mgr. *[Signature]*

*[Signature]*

Del.: 2403879172

CstOr 528  
Date 05/20/2015

From: Copper and Brass Sales CA

Cust. TECHNOWERX INC

CstAr

Wgt.: 1,271 LB

CstAr  
Wgt.: 1,772 LB

CstOr 5400232074  
Date 08/21/2014

*[Signature]*