



Sandvik Materials Technology  
Product Area Tube

**MATERIAL CERTIFICATE**

Cert#: 201307585

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**Plant Location:**

Sold To: 554999  
PAC STAINLESS LTD.  
SEATTLE WA

Ship To:  
PAC STAINLESS LTD.  
HOUSTON TX

Customer Order No: 46908H  
Sandvik Order No: 231089/3  
Work Order/Lot: 230976

Certification Date: 20130228

ASTM A511-11, ASTM A269-10, ASTM A213-11a  
ASME SA-213 (except ave. wall), ASME Section II  
2010 Edition, 2011 Addenda, NACE MR0175/ISO 15156, NACE MR0103-2010

Cold Finished BRIGHT ANNEALED Seamless Tube  
Type MT 316/MT 316L/TP316/TP316L

Size: 1.000" X .120" AW  
Heat: 533067

Material Manufacturer: Sandvik Materials Technology, USA

**ANALYSIS %**

	C	Si	Mn	P	S	Cr	Ni
Heat	.017	.39	1.69	.027	.006	16.83	12.45
Prod	.018	.39	1.68	.028	.005	16.79	12.43
	Fe	Mo	Co	Ti	Cu	Al	Pb
Heat		2.05	.090	.003	.34	.004	.00005
Prod		2.04	.090	.003	.33	.003	.00005

Heat  
Prod

**Mechanical Tests:**

Yield Strength				Tensile Strength		Elongation in %				Reduction Of Area
0.2%		1.0%								
psi	MPa	psi	MPa	psi	MPa	E2"	E10"	E4d	E5d	%
51700	356.6		N/A	86200	594.5	48	N/A	N/A	N/A	N/A
58100	400.7			89000	613.8	46				

Hardness Test Results: 80HRBW, 80HRBW

Flare Test per ASTM A450/A1016 and ASME SA450/SA1016,

No. samples: 2 Result: Acceptable

Flattening Test per ASTM A450/A1016 and ASME SA450/SA1016:

Acceptable

Tensile Test sample width (1=Full-Size 2=1/2" Strip): 1

This Material complies with DFARS 252.225-7014 & Alternate 1

Country Of Origin: United States

This Material complies with FAR BAA (FAR 52.225-1)

This Material complies with DFARS BAA (DFARS 252.225-7001)

and FAR TAA (FAR 52.225-5)

Material Does Qualify for NAFTA

100% Positive Material Identification performed

All material subjected to a final solution annealing heat treatment with material at a temperature of 1900 deg. F minimum followed by rapid quenching to below 800 deg. F in less than three (3) minutes.

The material has not come in contact with Mercury or Mercury containing compounds.

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No welding has been performed on this material.  
Material has been eddy current tested in accordance with  
ASTM A450, ASTM A1016 and is acceptable.  
Material has been manufactured/supplied in accordance  
with Sandvik Materials Technology Quality Manual-Standard  
Products Revision 13 dated November 20, 2012. Quality system  
has been approved to ISO 9001:2008. (Cert# GBG0000502,30AU13)  
Certificate produced in accordance with EN 10204 3.1  
(formerly EN 10204 3.1.B)  
Melt Source: AB SANDVIK MT, SWEDEN  
Melt Method: Electric Arc Furnace-AOD Refining  
This is to certify that the contents of this certificate  
are correct and accurate as contained in Sandvik's records,  
and that all above test results and operations performed are  
in compliance with the requirements of the purchase order  
and the specification(s) listed above.

Electronically Generated Certificate-Valid without signature  
Stephen Knight, Quality Engr.  
10 (PACINST R27) (15) CF (TV3141)