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Sandvik Materials Technology

Product Area Tube

982 Griffin Pond Rd, Clarks Summit, PA US 18411, Ph: 670-585-7500

MATERIAL CERTIFICATE

Cert#: 180008685

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55-T2-S-035-20

Plant Location: 982 Griffin Pond Road, Clarks Summit, PA 18411

Sold To: 8442 SWAGELOK MANUFACTURING COMPANY INDEPENDENCE OH
 Customer Order No: Y66112
 Sandvik Order No: 337041/1

Ship To: EDMONTON VALVE & FITTING INC EDMONTON AB
 Certification Date: 20180317

Work Order/Lot: 0002002453

SWAGELOK SMS-00333 Rev. D, ASTM A632-04

Cold Finished BRIGHT ANNEALED Seamless Tube
 Type TP316/TP316L (UNS S31600/S31603)

Size: .125" X .035"
 Heat: 548489

ANALYSIS %

	C	Si	Mn	P	S	Cr	Ni
Heat	.019	.39	1.59	.028	.008	17.33	13.14
Prod	.021	.41	1.60	.030	.006	17.40	13.21
	Fe	Mo	Cu	Al	Pb		
Heat	2.63	.33	.005				
Prod	2.65	.33	.003				

Mechanical Tests:

Yield Strength				Tensile Strength		Elongation in %				Reduction Of Area %
0.2%		1.0%		psi	MPa	E2"	E10"	E4d	E5d	%
psi	MPa	psi	MPa	psi	MPa	E2"	E10"	E4d	E5d	N/A
54080	373.0	N/A	N/A	82790	571.0	54	N/A	N/A	N/A	
56840	392.0			82940	572.0	54				
55390	382.0			83230	574.0	54				
56550	390.0			82360	568.0	54				

Hardness Test Results: 84HRBW, 81HRBW, 82HRBW

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

0
 Tensile Test sample width (1=Full-Size 2=1/2" Strip): 1
 Country Of Origin: Germany

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.

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 is capable of passing the ASTM A262 Practice "E".
 Inspection certificate produced in accordance with EN 10204 3.1 (formerly EN 10204 3.1.B).

No unauthorized alterations. The contents of this Inspection Certificate may not be modified or revised in any way without the prior written approval of Sandvik Materials Technology. Unauthorized alterations to the Inspection Certificate, including introduction of false, fictitious or fraudulent statements or entries, may be punishable by

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fines, imprisonment, or both. This Inspection Certificate may be copied only in the manner and for the purposes specified in EN 10204:2004, Section 6. Contravention of this notice will be prosecuted to the fullest extent of the applicable law(s).

Material has been manufactured/supplied in accordance with Sandvik Materials Technology Quality Manual-Commercial Products Revision 0 dated Dec. 7, 2017. Quality system has been approved to ISO 9001:2015 (Cert# 10047907, 02JAN18) No unauthorized alterations. The content of this inspection certificate may not be modified or revised in any way without the prior written approval of Sandvik Materials Technology. Unauthorized alterations to the inspection certificate, including introduction of false, fictitious or fraudulent statements or entries, may be punishable by fines, imprisonment, or both.

Contravention of this notice will be prosecuted to the fullest extent of the applicable laws/

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
John Scherer, Quality Mgr-Tube
10 (SWINST=1/8-316 R2) (10) CF (HV5647)