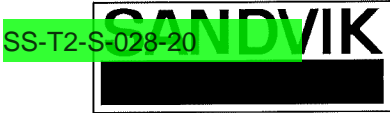


Sandvik Materials Technology

MATERIAL CERTIFICATE

Product Area Tube

P.O. Box 1220, Scranton, PA, PA US 185011220, Ph: 570-585-7500



www.smt.sandvik.com
www.smt.sandvik.com/nafta

Cert#: 201329169

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

Sold To: 8442	Ship To:
SWAGELOK MANUFACTURING COMPANY	EDMONTON VALVE & FITTING INC
INDEPENDENCE OH	EDMONTON AB
Customer Order No: X17087	Certification Date: 20130820
Sandvik Order No: 128623/1	
Work Order/Lot: 175022	

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

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

Size: .125" X .028"
Heat: 533519

ANALYSIS %

	C	Si	Mn	P	S	Cr	Ni
Heat	.012	.39	1.72	.028	.008	16.96	11.27
Prod	.009	.40	1.69	.027	.005	16.99	11.10
	Fe	Mo	Cu	Al	Pb		
Heat		2.02	.26				
Prod		2.00	.26				

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	E2"	E10"	E4d	E5d
37420	258.1	N/A		80780	557.1	44	N/A
34810	240.1			81650	563.1	47	N/A
32920	227.0			79910	551.1	43	N/A
34660	239.0			80780	557.1	43	N/A
38000	262.1			80640	556.1	43	N/A

Hardness Test Results: 59HRBW, 61HRBW, 60HRBW, 62HRBW, 59HRBW, 61HRBW

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

No. samples: 64 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

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)

Material has been manufactured/supplied in accordance with Sandvik Materials Technology Quality Manual-Standard Products Revision 14 dated July 30, 2013. Quality system has been approved to ISO 9001:2008. (Cert# GBG0000502,30AU13)

MATERIAL CERTIFICATE

Cert#: 201329169

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Certificate produced in accordance with EN 10204 3.1
(formerly EN 10204 3.1.B)

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 (SWINST=1/8-316 R0) (10) CF (ND5899)