



INSPECTION CERTIFICATE acc to EN 10 204 3.1

Processkontroll Items AB  
Box 2088  
444 02 STORA HÖGA  
SWEDEN

INSPECTION STAMP  
QA-TUBE

<b>Customer References</b>		<b>Sandvik References</b>	
713336	Customer order 2013-10-14	Order No. 347617	Subs No. 559195
003-00991	ITEMS	ABSMT No. 300-93502	Dispatch note 11358/54
		C.Code 15	

<b>Material description</b> SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING	<b>Steel/material Designations</b> Sandvik AISI 3R60 TP316/TP316L EN no 1.4435
<b>Steel making process</b> Electric furnace	

**Technical requirements**  
 ASTM A-213-11A AW, ASME SA-213-ED-10 AD-11A AW, ASTM A-269-10  
 NACE MR0175/ISO 15156-3:2009  
 PED 97/23/EC EN 10216-5 TC1  
 HRB MAX 80

**EXTENT OF DELIVERY**

It	Product designation	Heat	Lot	Pieces	Kg	M
01	THT-3R60-12-1	536339	17706	150	258.0	900.00
	12.00 X 1.00	537093	20523	17	29.0	102.00
			Total	167	287.0	1002.00

**TEST RESULTS**

**Chemical composition (weight%)**

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
536339	0.019	0.39	1.62	0.028	0.008	17.36	13.07	2.52
537093	0.020	0.44	1.71	0.029	0.009	17.28	13.10	2.53
	<b>N</b>							
536339	0.046							
537093	0.038							

**Chemical composition, product (weight%)**

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
536339	0.022	0.40	1.62	0.030	0.007	17.43	13.11	2.54
537093	0.019	0.44	1.71	0.029	0.008	17.33	13.13	2.50
	<b>N</b>							
536339	0.050							
537093	0.037							

Quality assurance - Ulrik Rodling / QA-manager  
MTC Service / Certificates

**Tensile test at room temperature**

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
	Rp0.2	Rp1.0	Rm	A	2"
17706	295	341	580	47	44
20523	305	351	573	54	52

**Hardness test**

Lot	Min	Max
	HRB	HRB
17706	75	76
20523	79	80

**Following controls/tests have been satisfactorily performed:**

- Flattening test.
- Flaring test
- PMI-test.
- Intergranular corrosion test acc to ASTM A-262 PR.E
- Leak test: Eddy current test acc to EN 10246-2, ASME SA-1016.
- Visual inspection and dimensional control.

**Heat Treatment:**

Solution annealed at a temperature of Min 1040° C and quenched.

**Marking:**

SANDVIK 3R60 ASTM/ASME A/SA-213AW A-269 EN 10216-5 TC1 EN 10305-1 EN 1.4435 TP 316/316L COLD SMLS NDE 12.00 X 1.00 MM HT 536339 SS LOT 17706 MADE BY SANDVIK IN SWEDEN \*QA-TUBE\*

SANDVIK 3R60 ASTM/ASME A/SA-213AW A-269 EN 10216-5 TC1 EN 10305-1 EN 1.4435 TP 316/316L COLD SMLS NDE 12.00 X 1.00 MM HT 537093 SS LOT 20523 MADE BY SANDVIK IN SWEDEN \*QA-TUBE\*

The raw material is free from radioactive contamination.

Material free from mercury contamination.

Approved acc. AD 2000-Merkblatt W0 and certified acc. to Pressure Equipment Directive (97/23/EC) by TUEV NORD; notified body, reg.no. 0045.

The number of tests are based on the size of the manufacturing lot before cutting to finished lengths.

The delivered products comply with the specifications and requirements of the order.

The material is manufactured according to a Quality system, approved and registered to ISO 9001:2008.



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The certificate is produced with EDP and valid without signature.