



**CERTIFICATE**

**No. A/13-349332 Rev 00**  
**Date 2013-07-11 Page 1/2**

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>	
713014	Customer order 2013-07-09	Order No. 338080	Subs No. 553747
003-00991	ITEMS	ABSMT No. 300-88881	ABSMT Dispatch note 03569/54 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
02	THT-3R60-12-1	535740	59945	121	205.0	726.00
	12.00 X 1.00	535780	59948	46	78.0	276.00
				<b>Total</b>	<b>167</b>	<b>283.0 1002.00</b>

**TEST RESULTS**

**Chemical composition (weight%)**

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
535740	0.023	0.40	1.61	0.028	0.009	17.41	13.19	2.53
535780	0.017	0.39	1.73	0.030	0.010	17.34	13.10	2.55
		<b>N</b>						
535740	0.035							
535780	0.041							

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

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
535740	0.027	0.41	1.59	0.029	0.008	17.37	13.10	2.54
535780	0.018	0.40	1.72	0.030	0.011	17.34	13.04	2.56
		<b>N</b>						
535740	0.039							
535780	0.042							

**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"
59945	328	376	568	52	48
59948	321	361	572	52	48

**Hardness test**

Lot	Min	Max
	HRB	HRB
59945	78	80
59948	77	79

**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 535740 SS LOT 59945 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 535780 SS LOT 59948 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.

The certificate is produced with EDP and valid without signature.