



**CERTIFICATE**

**No. A/12-274766**

**Rev 00**

**Date 2012-08-29**

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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>	
711829	Customer order 2012-08-29	Order No. 302868	Subs No. 533773
003-00991	ITEMS	ABSMT No. 300-71665	Dispatch note 29689/54 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-213-10A 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-3R60-28-2.5 28.00 X 2.50	532157	45952	4	38.0	24.00
				Total	4	38.0 24.00

**TEST RESULTS**

**Chemical composition (weight%)**

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
532157	0.018	0.39	1.61	0.029	0.009	17.31	13.13	2.53
	<b>N</b>							
532157	0.043							

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

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
532157	0.019	0.40	1.61	0.031	0.008	17.33	13.20	2.53
	<b>N</b>							
532157	0.043							

**Quality assurance - Per Eriksson / 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"
45952	322	360	591	49	55
	319	358	601	47	53

**Hardness test**

Lot	Min	Max
	HRB	HRB
45952	78	80

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

- Flattening test.
- Ring expansion 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 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 28.00 X 2.50 MM HT 532157 SS LOT 45952 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.