

**CERTIFICATE****No. V/12-014937 Rev 00**
Date 2012-12-18 Page 1/2INSPECTION CERTIFICATE acc to
EN 10 204 3.1Processkontroll Items AB
Box 2088
444 02 STORA HÖGA
SWEDENINSPECTION STAMP
QA-TUBE

Customer References	Sandvik References
712250	Order No. Subs No. Dispatch note 315539 123131 124657 Suppl. No C.Code 123131 15

Material description	Steel/material Designations
SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING	Sandvik AISI 3R60 TP316/TP316L EN no 1.4435
Steel making process 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	
01	THT-3R60-12-1.5	534045	50111	
	12.00 X 1.50	534044	50467	
		534044	50498	
		Total		

TEST RESULTS								
Chemical composition (weight%)								
Heat	C	Si	Mn	P	S	Cr	Ni	Mo
534044	0.019	0.43	1.61	0.028	0.010	17.18	13.13	2.52
534045	0.019	0.43	1.66	0.028	0.007	17.23	13.17	2.53
N								
534044	0.043							
534045	0.035							

Chemical composition, product (weight%)								
Heat	C	Si	Mn	P	S	Cr	Ni	Mo
534044	0.023	0.43	1.60	0.029	0.009	17.29	13.13	2.51
534045	0.019	0.44	1.66	0.029	0.007	17.32	13.15	2.54
N								
534044	0.044							
534045	0.039							

Quality assurance - Per Eriksson / QA-manager
MTC Service / Certificates

**CERTIFICATE****No. V/12-014937****Rev 00****Date 2012-12-18****Page 2/2****Tensile test at room temperature**

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
	Rp0.2	Rp1.0	Rm	A	2"
50111	280	321	557	52	49
50467	286	326	569	54	51
50498	292	334	565	54	51

Hardness test

Lot	Min	Max
	HRB	HRB
50111	76	77
50467	75	78
50498	73	76

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 min 1040° C.

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 1.50 MM HT 534045 SS LOT 50111 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 1.50 MM HT 534044 SS LOT 50467 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 1.50 MM HT 534044 SS LOT 50498 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.