



INSPECTION CERTIFICATE acc to EN 10 204 3.1

Processkontroll Items AB
Box 2088
444 02 STORA HÖGA
SWEDEN

INSPECTION STAMP
QA-TUBE

Customer References 750352	Sandvik References Order No. Subs No. Dispatch note 366425 133996 139561 Suppl. No C.Code 133996 15
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Material description SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING Steel making process Electric furnace	Steel/material Designations Sandvik AISI 3R60 TP316/TP316L EN no 1.4435
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Technical requirements
ASTM A-213-13 AW, ASME SA-213-ED-10 AD-11A AW, ASTM A-269-13
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	Kg	M
01	THT-3R60-12-1	537675	23380	26.4	96.00
	12.00 X 1.00	537737	23384	23.1	84.00
		537737	23386	21.4	78.00
		537918	24108	204.9	744.00
Total				275.9	1002.00

TEST RESULTS

Chemical composition (weight%)

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
537675	0.017	0.43	1.62	0.029	0.007	17.33	13.15	2.52
537737	0.019	0.43	1.63	0.029	0.010	17.25	13.07	2.51
537918	0.022	0.41	1.54	0.027	0.009	17.25	13.03	2.53
N								
537675	0.039							
537737	0.043							
537918	0.041							

Quality assurance - Lars-Åke Bergqvist / QA-manager
MTC Service / Certificates

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

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
537675	0.023	0.43	1.61	0.030	0.007	17.30	13.13	2.53
537737	0.021	0.45	1.62	0.029	0.007	17.31	13.11	2.51
537918	0.022	0.42	1.55	0.030	0.011	17.34	13.08	2.57
N								
537675	0.036							
537737	0.044							
537918	0.043							

Tensile test at room temperature

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
	Rp0.2	Rp1.0	Rm	A	2"
23380	318	357	567	55	50
23384	293	336	574	55	52
23386	294	334	577	53	48
24108	300	343	571	45	40

Hardness test

Lot	Min	Max
	HRB	HRB
23380	76	78
23384	72	74
23386	75	76
24108	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 537675 SS LOT 23380 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 537737 SS LOT 23384 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 537737 SS LOT 23386 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 537918 SS LOT 24108 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.