



CERTIFICATE

No. V/10-047223 Rev 00
Date 2010-09-03 Page 1/3INSPECTION CERTIFICATE acc to
EN 10 204 3.1Processkontroll Items AB
Box 2088
444 02 STORA HÖGA
SWEDENINSPECTION STAMP
QA-TUBE

Customer References 709057/Holmgren	Sandvik References <table><tr><td>Order No.</td><td>Subs No.</td><td>Dispatch note</td></tr><tr><td>210719</td><td>183744</td><td>097070</td></tr><tr><td>Suppl. No</td><td>C.Code</td><td></td></tr><tr><td>183744</td><td>15</td><td></td></tr></table>	Order No.	Subs No.	Dispatch note	210719	183744	097070	Suppl. No	C.Code		183744	15																																																																																			
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Material description SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING Steel making process Electric furnace	Steel/material Designations <table><tr><td>Sandvik</td><td>SS</td></tr><tr><td>3R60</td><td>2353</td></tr><tr><td>AISI</td><td>AFNOR</td></tr><tr><td>TP316/TP316L</td><td>Z2CND17-13</td></tr><tr><td>W.nr</td><td>DIN</td></tr><tr><td>1.4435</td><td>X 2 CRNIMO 18 14 3</td></tr><tr><td>EN no</td><td></td></tr><tr><td>1.4436/1.4435</td><td></td></tr></table>	Sandvik	SS	3R60	2353	AISI	AFNOR	TP316/TP316L	Z2CND17-13	W.nr	DIN	1.4435	X 2 CRNIMO 18 14 3	EN no		1.4436/1.4435																																																																															
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Technical requirements PED/23/EC, EN 10216-5 TC1 SS 219711, DIN 17458 TC1, NFA 49-117-09/85 ASTM A-213-09A AW, ASME SA-213-ED-07 AD-09B AW, ASTM A-269-08 NACE MR0175/ISO 15156-3:2003, HRB Max 80																																																																																															
EXTENT OF DELIVERY <table><thead><tr><th>It</th><th>Product designation</th><th>Heat</th><th>Lot</th><th>Kg</th><th>M</th></tr></thead><tbody><tr><td>01</td><td>THT-3R60-10-2</td><td>047375</td><td>93230</td><td>12.0</td><td>30.00</td></tr><tr><td></td><td>10.00 X 2.00</td><td>047437</td><td>93825</td><td>28.8</td><td>72.00</td></tr><tr><td colspan="4">Total</td><td>40.9</td><td>102.00</td></tr></tbody></table> <table><thead><tr><th colspan="2">KEY TO HEAT</th><th colspan="2">KEY TO LOT</th></tr><tr><th>Heat Code</th><th>Heat No.</th><th>Lot Code</th><th>Lot No.</th></tr></thead><tbody><tr><td>047375</td><td>523476</td><td>93230</td><td>349489</td></tr><tr><td>047437</td><td>524070</td><td>93825</td><td>350324</td></tr></tbody></table> TEST RESULTS Chemical composition (weight%) <table><thead><tr><th>Heat</th><th>C</th><th>Si</th><th>Mn</th><th>P</th><th>S</th><th>Cr</th><th>Ni</th><th>Mo</th></tr></thead><tbody><tr><td>047375</td><td>0.020</td><td>0.39</td><td>1.69</td><td>0.034</td><td>0.007</td><td>17.22</td><td>13.10</td><td>2.52</td></tr><tr><td>047437</td><td>0.026</td><td>0.38</td><td>1.61</td><td>0.028</td><td>0.007</td><td>17.42</td><td>13.10</td><td>2.52</td></tr><tr><td colspan="9">N</td></tr><tr><td>047375</td><td>0.049</td><td colspan="7"></td></tr><tr><td>047437</td><td>0.045</td><td colspan="7"></td></tr></tbody></table> Quality assurance - Per Eriksson/ QA-manager Tube & Pipe MTC Service / Certificates		It	Product designation	Heat	Lot	Kg	M	01	THT-3R60-10-2	047375	93230	12.0	30.00		10.00 X 2.00	047437	93825	28.8	72.00	Total				40.9	102.00	KEY TO HEAT		KEY TO LOT		Heat Code	Heat No.	Lot Code	Lot No.	047375	523476	93230	349489	047437	524070	93825	350324	Heat	C	Si	Mn	P	S	Cr	Ni	Mo	047375	0.020	0.39	1.69	0.034	0.007	17.22	13.10	2.52	047437	0.026	0.38	1.61	0.028	0.007	17.42	13.10	2.52	N									047375	0.049								047437	0.045							
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Chemical composition, product (weight%)

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
047375	0.021	0.38	1.68	0.034	0.006	17.20	13.05	2.52
047437	0.026	0.39	1.62	0.028	0.005	17.45	13.16	2.52
N								
047375	0.049							
047437	0.038							

Tensile test at room temperature

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
93230	Rp0.2	Rp1.0	Rm	A	4D
	296	331	605	62	58
	314	349	612	62	60
	301	335	608	60	56
93825	327	364	605	54	54
	317	351	604	58	56
	318	350	608	55	54

Hardness test

Lot	Min	Max
	HRB	HRB
93230	78	80
93825	77	80

Following controls/tests have been satisfactorily performed:

- Flattening test.
- Flaring test
- PMI-test.
- Intergranular corrosion test acc to ASTM A-262 PR.E
- Intergranular corrosion test acc. to EN ISO3651-2, Method A.
- 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 NFA 49-117 EN 10216-5 TC1 SS 2353-22
WNR 1.4435 TP 316/TP 316L Z2CND17-13 EN 1.4435 M S PK1 10.00 X 2.00 MM HT 5234
76 SC LOT 349489 DIN 2391 *QA-TUBE*

SANDVIK 3R60 ASTM/ASME A/SA-213AW/A-269 NFA 49-117 EN 10216-5 TC1 SS 2353-22 W
NR 1.4435 TP 316/TP 316L Z2CND17-13 EN 1.4435 M S PK1 NDE 10.00 X 2.00 MM HT 5
24070 SC LOT 350324 DIN 2391/EN 10305-1 *QA-TUBE*

Approved acc. AD 2000-Merkblatt W0 and certified acc. to
Pressure Equipment Directive (97/23/EC) by
TUEV NORD GmbH; 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.



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The certificate is produced with EDP and valid without signature.

TEST RESULTS TRANSFERRED FROM CERTIFICATE NO 00038888
00039471