

**CERTIFICATE****No. V/10-035574 Rev 00**
Date 2010-04-13 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 708097	Sandvik References Order No. Subs No. Dispatch note 176987 157478 091040 Suppl. No C.Code 157478 15																																																																																																						
Material description SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING Steel making process Electric furnace	Steel/material Designations 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																																																																																																						
Technical requirements PED/23/EC, EN 10216-5 TC1 SS 219711, DIN 17458 TC1, NFA 49-117-09/85 ASTM A-213-08 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-3R60-16-1 16.00 X 1.00</td><td>047362</td><td>93548</td><td>76.6</td><td>204.00</td></tr><tr><td colspan="4">Total</td><td>76.6</td><td>204.00</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>047362</td><td>523479</td><td>93548</td><td>4845030/1-2</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>047362</td><td>0.021</td><td>0.52</td><td>1.63</td><td>0.030</td><td>0.009</td><td>17.16</td><td>13.38</td><td>2.54</td></tr><tr><td></td><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>047362</td><td>0.046</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table> Chemical composition, product (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>047362</td><td>0.020</td><td>0.50</td><td>1.65</td><td>0.031</td><td>0.009</td><td>17.18</td><td>13.37</td><td>2.55</td></tr><tr><td></td><td>N</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>047362</td><td>0.047</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>		It	Product designation	Heat	Lot	Kg	M	01	THT-3R60-16-1 16.00 X 1.00	047362	93548	76.6	204.00	Total				76.6	204.00	KEY TO HEAT		KEY TO LOT		Heat Code	Heat No.	Lot Code	Lot No.	047362	523479	93548	4845030/1-2	Heat	C	Si	Mn	P	S	Cr	Ni	Mo	047362	0.021	0.52	1.63	0.030	0.009	17.16	13.38	2.54		N								047362	0.046								Heat	C	Si	Mn	P	S	Cr	Ni	Mo	047362	0.020	0.50	1.65	0.031	0.009	17.18	13.37	2.55		N								047362	0.047							
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**CERTIFICATE****No. V/10-035574****Rev 00****Date 2010-04-13****Page 2/2****Tensile test at room temperature**

	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
Lot	Rp0.2	Rp1.0	Rm	A	2"
93548	279	308	553	51	49
	275	307	551	52	54
	283	302	553	53	51
	272	313	545	50	52

Hardness test

	Min	Max
Lot	HRB	HRB
93548	76	78

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 16.00 X 1.00 MM HT 5234
79 SZ LOT 4845030/1-2 DIN 2391 *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.

The certificate is produced with EDP and valid without signature.

TEST RESULTS TRANSFERRED FROM CERTIFICATE NO A100392