

**CERTIFICATE****No. A/16-572779 Rev 00**
Date 2016-04-20 Page 1/2INSPECTION CERTIFICATE acc to
EN 10204 3.1Processkontroll Items AB
Box 2088
444 02 STORA HÖGA
SWEDENINSPECTION STAMP
QA-TUBE

Customer References 753304 003-00991 ITEMS Customer order 2016-04-19		Sandvik References Order No. Subs No. ABSMT Dispatch note 438620 608665 19522/54 ABSMT No. C.Code 300-45490 15																																																																																																										
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																																																																																																										
Technical requirements ASTM A-213-15C AW, ASME SA-213-ED-15 AW, ASTM A-269-15A NACE MR0175/ISO 15156-3:2009 PED 97/23/EC EN 10216-5 TC1 HRB MAX 80																																																																																																												
EXTENT OF DELIVERY <table><thead><tr><th>It</th><th>Product designation</th><th>Heat</th><th>Lot</th><th>Pieces</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>048245</td><td>93599</td><td>10</td><td>23.0</td><td>60.00</td></tr><tr><td colspan="4"></td><td>Total</td><td>10</td><td>23.0 60.00</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>048245</td><td>544286</td><td>93599</td><td>181188</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>048245</td><td>0.018</td><td>0.38</td><td>1.51</td><td>0.031</td><td>0.0009</td><td>17.20</td><td>13.17</td><td>2.52</td></tr><tr><td colspan="9">N</td></tr><tr><td>048245</td><td colspan="8">0.037</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>048245</td><td>0.017</td><td>0.38</td><td>1.50</td><td>0.031</td><td>0.0009</td><td>17.27</td><td>13.11</td><td>2.51</td></tr><tr><td colspan="9">N</td></tr><tr><td>048245</td><td colspan="8">0.038</td></tr></tbody></table>				It	Product designation	Heat	Lot	Pieces	Kg	M	01	THT-3R60-16-1 16.00 X 1.00	048245	93599	10	23.0	60.00					Total	10	23.0 60.00	KEY TO HEAT		KEY TO LOT		Heat Code	Heat No.	Lot Code	Lot No.	048245	544286	93599	181188	Heat	C	Si	Mn	P	S	Cr	Ni	Mo	048245	0.018	0.38	1.51	0.031	0.0009	17.20	13.17	2.52	N									048245	0.037								Heat	C	Si	Mn	P	S	Cr	Ni	Mo	048245	0.017	0.38	1.50	0.031	0.0009	17.27	13.11	2.51	N									048245	0.038							
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Quality assurance - Lars-Åke Bergqvist / QA-manager MTC Service / Certificates																																																																																																												

**Tensile test at room temperature**

	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
Lot	Rp0.2	Rp1.0	Rm	A	2"
93599	285	330	555	46	46
	292	338	555	45	43

Hardness test

	Min	Max
Lot	HRB	HRB
93599	69	75

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 A-632 TP 316/316L EN 10216-5 TC1 MS WNR 1.4435 EN 1.4435 COLD SMLS 16.00 X 1.00 MM **SAKNAS** HT 544286 SG LOT 181188 *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.

No unauthorized alterations. The contents of this Inspection Certificate may not be modified or revised in any way without the prior written approval of AB Sandvik Materials Technology. Unauthorized alterations to the Inspection Certificate, including introduction of false, fictitious or fraudulent statements or entries, may be punishable by fines, imprisonment, or both. This Inspection Certificate may be copied only in the manner and for the purposes specified in Section 6 of EN 10204:2004. Contravention of this notice will be prosecuted to the fullest extent of applicable law.

The certificate is produced with EDP and valid without signature.

TEST RESULTS TRANSFERRED FROM CERTIFICATE NO 181188