

**CERTIFICATE****No. A/16-619337 Rev 00**
Date 2016-11-23 Page 1/2INSPECTION CERTIFICATE acc to
EN 10204 3.1Processkontroll Items AB
Box 2088
444 02 STORA H@GA
SWEDENINSPECTION STAMP
QA-TUBE

Customer References 754113 003-00991 ITEMS Customer order 2016-11-16		Sandvik References Order No. Subs No. ABSMT Dispatch note 460318 619797 33710/54 ABSMT No. C.Code 300-54977 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 15156-3:2015, NACE MR0103/ISO 17495:2015 PED 2014/68/EU 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-3R60-6-1 6.00 X 1.00</td><td>048298</td><td>17249</td><td>48</td><td>37.0</td><td>288.00</td></tr><tr><td colspan="4">Total</td><td>48</td><td>37.0</td><td>288.00</td></tr></tbody></table> KEY TO HEAT <table><thead><tr><th>Heat Code</th><th>Heat No.</th></tr></thead><tbody><tr><td>048298</td><td>545679</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>048298</td><td>0.023</td><td>0.39</td><td>1.63</td><td>0.030</td><td>0.0080</td><td>17.25</td><td>13.13</td><td>2.62</td></tr><tr><td colspan="2">N</td><td colspan="7"></td></tr><tr><td>048298</td><td colspan="8">0.047</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>048298</td><td>0.018</td><td>0.38</td><td>1.59</td><td>0.031</td><td>0.0090</td><td>17.31</td><td>13.27</td><td>2.65</td></tr><tr><td colspan="2">N</td><td colspan="7"></td></tr><tr><td>048298</td><td colspan="8">0.036</td></tr></tbody></table>				It	Product designation	Heat	Lot	Pieces	Kg	M	01	THT-3R60-6-1 6.00 X 1.00	048298	17249	48	37.0	288.00	Total				48	37.0	288.00	Heat Code	Heat No.	048298	545679	Heat	C	Si	Mn	P	S	Cr	Ni	Mo	048298	0.023	0.39	1.63	0.030	0.0080	17.25	13.13	2.62	N									048298	0.047								Heat	C	Si	Mn	P	S	Cr	Ni	Mo	048298	0.018	0.38	1.59	0.031	0.0090	17.31	13.27	2.65	N									048298	0.036							
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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	4D
17249	307	349	589	54	53

Hardness test

Lot	Min	Max
	HRB	HRB
17249	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
- Leak test: Eddy current test acc to EN ISO 10893-1, 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 A213/A269 ASME SA213 COLD EN10216-5 TC1 EN10305-1 AW EN 1.44 35 TP316/316L CFA SML NDE 6.00 X 1.00 MM HT 545679 SS LOT 17249 MADE IN SWEDEN
QA-TUBE

The raw material is free from radioactive contamination.

Material free from mercury contamination.

No welding or weld repair.

Approved acc. AD 2000-Merkblatt W0 and certified acc. to Pressure Equipment Directive (2014/68/EU, Annex 1 para 4.3) 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.