

**CERTIFICATE**

A03/Z02

**No. A/20-889465****Rev****00****Date**

2020-04-29

**Page**

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A02/Z03

INSPECTION CERTIFICATE acc to  
EN 10204 3.1

A06

PROCESSKONTROLL ITEMS AB  
BOX 2088  
444 02 STORA HÖGA  
SWEDEN

INSPECTION STAMP

QA-TUBE

<b>Customer References</b> <span style="float: right;">A07</span> 759516 <span style="float: right;">Customer order</span> <span style="float: right;">2020-04-28</span>  003-00991 ITEMS	<b>Sandvik References</b> <span style="float: right;">A08</span> <b>Order No.</b> <b>Subs No.</b> <b>ABSMT</b> <b>Dispatch note</b> 553389 684029 17920/54 <b>ABSMT No.</b> <b>C.Code</b> 300-19598 29																																																																																																				
<b>Material description</b> <span style="float: right;">B01/B04</span> SEAMLESS STAINLESS COLD FINISHED INSTRUMENTATION TUBING   <b>Metallurgical process</b> <span style="float: right;">C70</span> Electric furnace	<b>Steel/material Designations</b> <span style="float: right;">B02</span> <b>Sandvik</b> <b>AISI</b> 3R60 TP316/TP316L <b>EN no</b> 1.4435																																																																																																				
<b>Technical requirements</b> <span style="float: right;">B03</span> ASTM A-213-19 AW, ASME SA-213-ED-19 AW, ASTM A-269-15A NACE MR0175/ISO 15156-3:-2015, NACE MR0103/ISO 17945-1:-2015 PED 2014/68/EU EN 10216-5 TC1 HRB MAX 80																																																																																																					
<b>EXTENT OF DELIVERY</b> <span style="float: right;">B07-B13</span> <table border="1" style="width: 100%; border-collapse: collapse;"> <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>02</td> <td>THT-3R60-19.05-1.24</td> <td>558649</td> <td>24271</td> <td>6</td> <td>20.0</td> <td>36.00</td> </tr> <tr> <td></td> <td>19.05 X 1.24</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td colspan="4" style="text-align: right;">Total</td> <td>6</td> <td>20.0</td> <td>36.00</td> </tr> </tbody> </table> <b>TEST RESULTS</b> <b>Chemical composition (weight%)</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <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>558649</td> <td>0.019</td> <td>0.38</td> <td>1.55</td> <td>0.029</td> <td>0.006</td> <td>17.50</td> <td>13.13</td> <td>2.62</td> </tr> <tr> <td></td> <td>Co</td> <td>Ti</td> <td>Al</td> <td>N</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>558649</td> <td>0.15</td> <td>0.006</td> <td>0.005</td> <td>0.040</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <b>Chemical composition, product (weight%)</b> <table border="1" style="width: 100%; border-collapse: collapse;"> <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>558649</td> <td>0.017</td> <td>0.38</td> <td>1.55</td> <td>0.030</td> <td>0.007</td> <td>17.50</td> <td>13.14</td> <td>2.64</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>558649</td> <td>0.039</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		It	Product designation	Heat	Lot	Pieces	Kg	M	02	THT-3R60-19.05-1.24	558649	24271	6	20.0	36.00		19.05 X 1.24						Total				6	20.0	36.00	Heat	C	Si	Mn	P	S	Cr	Ni	Mo	558649	0.019	0.38	1.55	0.029	0.006	17.50	13.13	2.62		Co	Ti	Al	N					558649	0.15	0.006	0.005	0.040					Heat	C	Si	Mn	P	S	Cr	Ni	Mo	558649	0.017	0.38	1.55	0.030	0.007	17.50	13.14	2.64		N								558649	0.039							
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<b>Quality assurance - Sofia Åkesson / Q-Manager</b> <span style="float: right;">A05/Z02</span> MTC Service / Certificates																																																																																																					

A01

 AB SANDVIK MATERIALS TECHNOLOGY Reg No. 556234-6832 VAT No. SE556234683201  
 SE-81181 SANDVIKEN SWEDEN www.materials.sandvik mtc\_service.smt@sandvik.com


**Tensile test at room temperature**

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
	Rp0.2	Rp1.0	Rm	A	2"
24271	318	356	594	50	50
	316	355	596	49	48

**Hardness test**

Lot	Min	Max
	HRB	HRB
24271	75	77

**Following controls/tests have been satisfactorily performed:**

- Flattening test.
- Flaring test
- 100% PMI-test.
- Intergranular corrosion test acc to ASTM A-262 PR.E and EN ISO 3651-2A
- 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 AW EN 1.4436 EN 1.4435 TP316/316L CFA SML NDE 19.05 X 1.24 MM 3/4" X 18 BWG/SWG HT 558649 SS LOT 24271 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 9001:2015.

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.

