



CERTIFICATE

A03/Z02
No. V/17-050505 Rev 00
Date 2017-02-27 Page 1/3

A02/Z03

INSPECTION CERTIFICATE acc to
EN 10204 3.1

A06

Processkontroll Items AB
Box 2088
444 02 STORA HÖGA
SWEDENINSPECTION STAMP
QA-TUBE

Customer References 754574	Sandvik References <table><tr><td>Order No.</td><td>Subs No.</td><td>Dispatch note</td></tr><tr><td>470504</td><td>155035</td><td>169378</td></tr><tr><td>Suppl. No</td><td>C.Code</td><td></td></tr><tr><td>155035</td><td>15</td><td></td></tr></table>	Order No.	Subs No.	Dispatch note	470504	155035	169378	Suppl. No	C.Code		155035	15																																																																																					
Order No.	Subs No.	Dispatch note																																																																																															
470504	155035	169378																																																																																															
Suppl. No	C.Code																																																																																																
155035	15																																																																																																
Material description SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING Steel making process Electric furnace	Steel/material Designations <table><tr><td>Sandvik</td><td>AISI</td></tr><tr><td>3R60</td><td>TP316/TP316L</td></tr><tr><td>EN no</td><td></td></tr><tr><td>1.4435</td><td></td></tr></table>	Sandvik	AISI	3R60	TP316/TP316L	EN no		1.4435																																																																																									
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 17945:2015 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>Kg</th><th>M</th></tr></thead><tbody><tr><td>02</td><td>THT-3R60-28-2</td><td>547494</td><td>20194</td><td>15.6</td><td>12.00</td></tr><tr><td></td><td>28.00 X 2.00</td><td></td><td></td><td></td><td></td></tr><tr><td colspan="4">Total</td><td>15.6</td><td>12.00</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>547494</td><td>0.020</td><td>0.38</td><td>1.54</td><td>0.031</td><td>0.009</td><td>17.30</td><td>13.06</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>547494</td><td>0.037</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>547494</td><td>0.019</td><td>0.39</td><td>1.54</td><td>0.032</td><td>0.007</td><td>17.29</td><td>13.03</td><td>2.65</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>547494</td><td>0.032</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	02	THT-3R60-28-2	547494	20194	15.6	12.00		28.00 X 2.00					Total				15.6	12.00	Heat	C	Si	Mn	P	S	Cr	Ni	Mo	547494	0.020	0.38	1.54	0.031	0.009	17.30	13.06	2.64		N								547494	0.037								Heat	C	Si	Mn	P	S	Cr	Ni	Mo	547494	0.019	0.39	1.54	0.032	0.007	17.29	13.03	2.65		N								547494	0.032							
It	Product designation	Heat	Lot	Kg	M																																																																																												
02	THT-3R60-28-2	547494	20194	15.6	12.00																																																																																												
	28.00 X 2.00																																																																																																
Total				15.6	12.00																																																																																												
Heat	C	Si	Mn	P	S	Cr	Ni	Mo																																																																																									
547494	0.020	0.38	1.54	0.031	0.009	17.30	13.06	2.64																																																																																									
	N																																																																																																
547494	0.037																																																																																																
Heat	C	Si	Mn	P	S	Cr	Ni	Mo																																																																																									
547494	0.019	0.39	1.54	0.032	0.007	17.29	13.03	2.65																																																																																									
	N																																																																																																
547494	0.032																																																																																																
Quality assurance - Lars-Åke Bergqvist / QA-manager MTC Service / Certificates																																																																																																	



CERTIFICATE

No. V/17-050505 Rev 00
Date 2017-02-27 Page 2/3

Tensile test at room temperature

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
	Rp0.2	Rp1.0	Rm	A	2"
20194	326	357	595	49	55
	316	350	603	51	55
	312	343	591	51	57
	318	349	604	46	50

Hardness test

Lot	Min	Max
	HRB	HRB
20194	72	74

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 CFD SML NDE 28.00 X 2.00 MM HT 547494 SS LOT 20194 MADE IN SWEDE
N *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.