

CERTIFICATE

No. A/16-564112 Rev 00 Date 2016-03-14 Page 1/2

INSPECTION CERTIFICATE acc to EN 10204 3.1

Processkontroll Items AB Box 2088 444 02 STORA HÖGA SWEDEN

INSPECTION STAMP QA-TUBE

Customer References

Customer

753050 order

2016-02-17

003-00991 ITEMS

HYDRAULIC TUBING

Sandvik References

Order No. Subs No. ABSMT Dispatch note

432177 605146 16848/54

ABSMT No. C.Code 300-42425 15

Material description Steel/material Designations SEAMLESS STAINLESS COLD FINISHED

Sandvik ATST

3R60 TP316/TP316L

EN no 1.4435

Steel making process

Electric furnace

Technical requirements

ASTM A-213-15A 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

It Product designation Pieces Heat Lot Kg M 048181 93561 33.0 48.00

03 THT-3R60-16-2 16.00 X 2.00

> Total 8 33.0

KEY TO HEAT KEY TO LOT

Heat Code Heat No. Lot Code Lot No.

048181 542914 93561 180013

TEST RESULTS

Chemical composition (weight%)

Heat C Si Mn \mathtt{Cr} Νi Mo P S

0.029 0.008 048181 0.024 0.36 1.50 17.31 13.07 2.52

N

048181 0.035

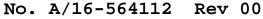
Chemical composition, product (weight%)

Lot C Si Mn P S \mathtt{Cr} Νi Mo 93561 0.021 1.49 0.029 0.006 0.36 17.31 13.04 2.52

N

93561 0.045

> Quality assurance - Lars-Ake Bergqvist / QA-manager MTC Service / Certificates



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Tensile test at room temperature

	Yield strength		Tensile strength	Elongation	
	MPA	MPa	MPa	%	%
Lot	Rp0.2	Rp1.0	Rm	A	2"
93561	282	318	557	44	46
	281	317	575	46	45

Hardness test

Lot Min Max 93561 78 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/ASME A/SA-213 A-269 EN 10216-5 TC1 EN 10305-1 TP 316/TP 316L EN 1.4435 COLD SMLS NDE 16.00 X 2.00 MM **SAKNAS** HT 542914 SG LOT 180013 MA DE BY SANDVIK *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 180013