

# CERTIFICATE

No. A/16-580591

Rev 00

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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

2016-05-24

order

442398

Order No. Subs No. ABSMT Dispatch note

610537 21780/54 ABSMT No. C.Code

300-47201 15

Sandvik References

003-00991 ITEMS

753453

Material description

SEAMLESS STAINLESS COLD FINISHED

HYDRAULIC TUBING

Steel/material Designations

Sandvik ATST

3R60 TP316/TP316L

EN no 1.4435

Steel making process

Electric furnace

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 97/23/EC EN 10216-5 TC1

HRB MAX 80

EXTENT OF DELIVERY

It Product designation Heat Pieces Kg M Lot

01 THT-3R60-20-2 545346 55006 38.0 42.00

20.00 X 2.00

Total 7 38.0

TEST RESULTS

Chemical composition (weight%)

C Si Mn P S CrΝi Mo 545346 0.017 0.43 1.73 0.032 0.010 17.19 13.14 2.63

N

545346 0.035

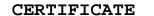
Chemical composition, product (weight%)

Heat C Si Mn P S  $\mathtt{Cr}$ Νi Mo 1.71 0.031 545346 0.017 0.42 0.010 17.20 2.64 13.06

N

545346 0.033

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



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Tensile test at room temper	erature
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	Yield strength		Tensile strength	Elongation	
	MPA	MPa	MPa	%	%
Lot	Rp0.2	Rp1.0	Rm	A	2"
55006	309	345	597	54	57
	311	345	592	53	56

## Hardness test

	Min	Max	
Lot	HRB	HRB	
55006	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/ASME A/SA-213 A-269 EN 10216-5 TC1 EN 10305-1 COLD AW EN 1.4 435 TP316/316L CFA SMLS NDE 20.00 X 2.00 MM HT 545346 SS LOT 55006 MADE BY SAN DVIK IN SWEDEN \*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.