



CERTIFICATE

No. A/16-618794 Rev 00
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INSPECTION CERTIFICATE acc to
EN 10204 3.1

Processkontroll Items AB
Box 2088
444 02 STORA H@GA
SWEDEN

INSPECTION STAMP
QA-TUBE

| | | | | |
|----------------------------|------------------------------|---------------------------|-----------------|------------------------------|
| Customer References | | Sandvik References | | |
| 754035 ERSÄTTN. | Customer order 2016-11-21 | Order No. 460747 | Subs No. 620065 | ABSMT Dispatch note 33548/54 |
| 003-00991 ITEMS | | ABSMT No. 300-55198 | C.Code 15 | |

| | |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| Material description SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING | Steel/material Designations Sandvik AISI 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 2014/68/EU EN 10216-5 TC1
 HRB MAX 80

EXTENT OF DELIVERY

| It | Product designation | Heat | Lot | Pieces | Kg | M |
|----|---------------------------------|--------|-------|--------|------|------------|
| 01 | THT-3R60-20-2.5 20.00 X 2.50 | 545825 | 58128 | 3 | 19.0 | 18.00 |
| | | | | Total | 3 | 19.0 18.00 |

TEST RESULTS

Chemical composition (weight%)

| Heat | C | Si | Mn | P | S | Cr | Ni | Mo |
|--------|-------|------|------|-------|-------|-------|-------|------|
| 545825 | 0.021 | 0.41 | 1.66 | 0.032 | 0.009 | 17.34 | 13.14 | 2.63 |
| | N | | | | | | | |
| 545825 | 0.041 | | | | | | | |

Chemical composition, product (weight%)

| Heat | C | Si | Mn | P | S | Cr | Ni | Mo |
|--------|-------|------|------|-------|-------|-------|-------|------|
| 545825 | 0.020 | 0.44 | 1.67 | 0.032 | 0.008 | 17.33 | 13.06 | 2.65 |
| | N | | | | | | | |
| 545825 | 0.048 | | | | | | | |

Quality assurance - Lars-Åke Bergqvist / QA-manager
MTC Service / Certificates

**Tensile test at room temperature**

| Lot | Yield strength | | Tensile strength | Elongation | |
|-------|----------------|-------|------------------|------------|----|
| | MPa | MPa | MPa | % | % |
| | Rp0.2 | Rp1.0 | Rm | A | 2" |
| 58128 | 303 | 333 | 590 | 52 | 56 |
| | 310 | 338 | 589 | 56 | 57 |

Hardness test

| Lot | Min | Max |
|-------|-----|-----|
| | HRB | HRB |
| 58128 | 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 20.00 X 2.50 MM HT 545825 SS LOT 58128 MADE BY SANDVIK 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.



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The certificate is produced with EDP and valid without signature.