

**CERTIFICATE****No. A/18-736092 Rev 00**
Date 2018-04-16 Page 1/3INSPECTION CERTIFICATE acc to
EN 10204 3.1Processkontroll Items AB
Box 2088
444 02 STORA H@GA
SWEDENINSPECTION STAMP
QA-TUBE

| Customer References | | Sandvik References | |
|----------------------------|------------------------------|---------------------------|------------------------|
| 7555998 | Customer order 2018-02-01 | Order No. 504693 | Subs No. 645042 |
| 003-00991 ITEMS | | ABSMT No. 300-75833 | Dispatch note 19381/54 |
| | | C.Code 15 | |

| Material description | Steel/material Designations |
|--|--|
| SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING | Sandvik AISI 3R60 TP316/TP316L EN no 1.4435 |
| Steel making process Electric furnace | |

| Technical requirements |
|---|
| ASTM A-213-17 AW, ASME SA-213-ED-17 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 | | | | | | |
|---------------------------|-------------------------------|--------|-------|--------|--------|----------------|
| It | Product designation | Heat | Lot | Pieces | Kg | M |
| 01 | THT-3R60-16-2 16.00 X 2.00 | 551672 | 39632 | 250 | 1066.0 | 1500.00 |
| | | | | Total | 250 | 1066.0 1500.00 |

| TEST RESULTS | | | | | | | | |
|--|-------|------|------|-------|-------|-------|-------|------|
| Chemical composition (weight%) | | | | | | | | |
| Heat | C | Si | Mn | P | S | Cr | Ni | Mo |
| 551672 | 0.019 | 0.43 | 1.63 | 0.027 | 0.009 | 17.29 | 13.07 | 2.62 |
| | N | | | | | | | |
| 551672 | 0.048 | | | | | | | |
| Chemical composition, product (weight%) | | | | | | | | |
| Heat | C | Si | Mn | P | S | Cr | Ni | Mo |
| 551672 | 0.022 | 0.44 | 1.64 | 0.028 | 0.008 | 17.30 | 13.09 | 2.64 |
| | N | | | | | | | |
| 551672 | 0.050 | | | | | | | |

Quality assurance - Sofia Åkesson / Q-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" |
| 39632 | 280 | 319 | 603 | 55 | 56 |
| | 273 | 315 | 599 | 52 | 52 |
| | 278 | 319 | 602 | 49 | 50 |
| | 275 | 314 | 604 | 50 | 50 |

Hardness test

| Lot | Min | Max |
|-------|-----|-----|
| | HRB | HRB |
| 39632 | 75 | 78 |

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 EN10305-1 AW EN 1.44 35 TP316/316L CFA SML NDE 16.00 X 2.00 MM HT 551672 SS LOT 39632 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 9001:2008.



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The certificate is produced with EDP and valid without signature.