



**CERTIFICATE**

**No. A/12-283178**

**Rev 00**

**Date 2012-10-03**

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INSPECTION CERTIFICATE acc to  
EN 10 204 3.1

Processkontroll Items AB  
Box 2088  
444 02 STORA HÖGA  
SWEDEN

INSPECTION STAMP  
QA-TUBE

|                            |                              |                           |                    |                                 |
|----------------------------|------------------------------|---------------------------|--------------------|---------------------------------|
| <b>Customer References</b> |                              | <b>Sandvik References</b> |                    |                                 |
| 711959                     | Customer order<br>2012-10-03 | Order No.<br>307028       | Subs No.<br>536153 | ABSMT Dispatch note<br>32435/54 |
| 003-00991                  | ITEMS                        | ABSMT No.<br>300-73778    | C.Code<br>15       |                                 |

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

**Technical requirements**  
 ASTM A-213-10A AW, ASME SA-213-ED-10 AD-11A AW, ASTM A-269-10  
 NACE MR0175/ISO 15156-3:2009  
 PED 97/23/EC EN 10216-5 TC1  
 HRB MAX 80

|  |                               |              |                         |               |                   |           |           |           |
|--|-------------------------------|--------------|-------------------------|---------------|-------------------|-----------|-----------|-----------|
| <b>EXTENT OF DELIVERY</b>                      |                               |              |                         |               |                   |           |           |           |
| <b>It</b>                                      | <b>Product designation</b>    | <b>Heat</b>  | <b>Lot</b>              | <b>Pieces</b> | <b>Kg</b>         | <b>M</b>  |           |           |
| 01   | THT-3R60-12-1<br>12.00 X 1.00 | 533303       | 47320                   | 167           | 285.0             | 1002.00   |           |           |
|  |                               |              |                         | <b>Total</b>  | 167               | 285.0     | 1002.00   |           |
| <b>TEST RESULTS</b>                            |                               |              |                         |               |                   |           |           |           |
| <b>Chemical composition (weight%)</b>          |                               |              |                         |               |                   |           |           |           |
| <b>Heat</b>                                    | <b>C</b>                      | <b>Si</b>    | <b>Mn</b>               | <b>P</b>      | <b>S</b>          | <b>Cr</b> | <b>Ni</b> | <b>Mo</b> |
| 533303   | 0.016                         | 0.35         | 1.66                    | 0.029         | 0.008             | 17.35     | 13.08     | 2.53      |
|  | <b>N</b>                      |              |                         |               |                   |           |           |           |
| 533303   | 0.033                         |              |                         |               |                   |           |           |           |
| <b>Chemical composition, product (weight%)</b> |                               |              |                         |               |                   |           |           |           |
| <b>Lot</b>                                     | <b>C</b>                      | <b>Si</b>    | <b>Mn</b>               | <b>P</b>      | <b>S</b>          | <b>Cr</b> | <b>Ni</b> | <b>Mo</b> |
| 47320  | 0.019                         | 0.34         | 1.62                    | 0.030         | 0.007             | 17.24     | 13.01     | 2.53      |
|  | <b>N</b>                      |              |                         |               |                   |           |           |           |
| 47320  | 0.046                         |              |                         |               |                   |           |           |           |
| <b>Tensile test at room temperature</b>        |                               |              |                         |               |                   |           |           |           |
|  | <b>Yield strength</b>         |              | <b>Tensile strength</b> |               | <b>Elongation</b> |           |           |           |
|  | <b>MPa</b>                    | <b>MPa</b>   | <b>MPa</b>              |               | <b>%</b>          | <b>%</b>  |           |           |
| <b>Lot</b>                                     | <b>Rp0.2</b>                  | <b>Rp1.0</b> | <b>Rm</b>               |               | <b>A</b>          | <b>2"</b> |           |           |
| 47320  | 333                           | 372          | 561                     |               | 50                | 47        |           |           |

**Quality assurance - Per Eriksson / QA-manager**  
**MTC Service / Certificates**

**Hardness test**

|            | <b>Min</b> | <b>Max</b> |
|------------|------------|------------|
| <b>Lot</b> | <b>HRB</b> | <b>HRB</b> |
| 47320      | 78         | 80         |

**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 and quenched.

**Marking:**

SANDVIK 3R60 ASTM/ASME A/SA-213AW A-269 EN 10216-5 TC1 EN 10305-1 EN 1.4435 TP 316/316L COLD SMLS NDE 12.00 X 1.00 MM HT 533303 SS LOT 47320 MADE BY SANDVIK 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.

The certificate is produced with EDP and valid without signature.