



**CERTIFICATE**

**No. A/10-982894**

**Rev 00**

**Date 2010-07-22**

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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> |                                           |
| 708823                     | Customer order<br>2010-06-22 | Order No. 202352          | Subs No. 177344                           |
| 003-00991                  | ITEMS                        | ABSMT No. 300-24468       | ABSMT Dispatch note 12156/54<br>C.Code 29 |

|                                                                                           |                                                                                                   |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Material description</b><br>SEAMLESS STAINLESS COLD FINISHED<br>INSTRUMENTATION TUBING | <b>Steel/material Designations</b><br>Sandvik AISI<br>3R60 TP316/TP316L<br>EN no<br>1.4436/1.4435 |
| <b>Steel making process</b><br>Electric furnace                                           |                                                                                                   |

**Technical requirements**  
 ASTM A-213-09A AW, ASME SA-213-ED-07 AD-09B AW, ASTM A-269-08  
 NACE MR0175/ISO 15156-3:2003  
 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>       |           |           |
| 03                                             | THT-3R60-12.7-1.24<br>12.70 X 1.24 | 047446      | 93962      | 10                | 22.0            | 60.00          |           |           |
|                                                |                                    |             |            | <b>Total</b>      | 10              | 22.0           | 60.00     |           |
| <b>KEY TO HEAT</b>                             |                                    |             |            | <b>KEY TO LOT</b> |                 |                |           |           |
| <b>Heat Code</b>                               | <b>Heat No.</b>                    |             |            |                   | <b>Lot Code</b> | <b>Lot No.</b> |           |           |
| 047446                                         | 523686                             |             |            |                   | 93962           | 4845665/1-2    |           |           |
| <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> |
| 047446                                         | 0.019                              | 0.38        | 1.61       | 0.032             | 0.009           | 17.24          | 13.09     | 2.54      |
|                                                | <b>N</b>                           |             |            |                   |                 |                |           |           |
| 047446                                         | 0.038                              |             |            |                   |                 |                |           |           |
| <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> |
| 93962                                          | 0.017                              | 0.39        | 1.59       | 0.032             | 0.008           | 17.27          | 13.05     | 2.56      |
|                                                | <b>N</b>                           |             |            |                   |                 |                |           |           |
| 93962                                          | 0.038                              |             |            |                   |                 |                |           |           |

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

**Tensile test at room temperature**

| Lot   | Yield strength |       | Tensile strength | Elongation |    |
|-------|----------------|-------|------------------|------------|----|
|       | MPa            | MPa   | MPa              | %          | %  |
|       | Rp0.2          | Rp1.0 | Rm               | A          | 2" |
| 93962 | 240            | 281   | 538              | 58         | 55 |
|       | 253            | 273   | 550              | 59         | 53 |

**Hardness test**

| Lot   | Min | Max |
|-------|-----|-----|
|       | HRB | HRB |
| 93962 | 70  | 71  |

**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 ASTM A-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 TP 316/TP 316L EN 1.4  
435 COLD SMLS NDE 12.70 X 1.24 MM 1/2" X 18 BWG/SWG HT 523686 SZ LOT 4845665/  
1-2 DIN 2391/EN 10305-1 \*QA-TUBE\*

Approved acc. AD 2000-Merkblatt W0 and certified acc. to  
Pressure Equipment Directive (97/23/EC) by  
TUEV NORD GmbH; 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.

The certificate is produced with EDP and valid without signature.

TEST RESULTS TRANSFERRED FROM CERTIFICATE NO A100574