



**CERTIFICATE**

**No. V/10-047223**

**Rev 00**

**Date 2010-09-03**

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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>  709057/Holmgren	<b>Sandvik References</b> Order No. Subs No. Dispatch note 210719 183744 097070 Suppl. No C.Code 183744 15
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<b>Material description</b> SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING  <b>Steel making process</b> Electric furnace	<b>Steel/material Designations</b> Sandvik SS 3R60 2353 AISI AFNOR TP316/TP316L Z2CND17-13 W.nr DIN 1.4435 X 2 CRNIMO 18 14 3 EN no <b>1.4436/1.4435</b>
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**Technical requirements**  
 PED/23/EC, EN 10216-5 TC1  
 SS 219711, DIN 17458 TC1, NFA 49-117-09/85  
 ASTM A-213-09A AW, ASME SA-213-ED-07 AD-09B AW, ASTM A-269-08  
 NACE MR0175/ISO 15156-3:2003, HRB Max 80

**EXTENT OF DELIVERY**

It	Product designation	Heat	Lot	Kg	M
01	THT-3R60-10-2	047375	93230	12.0	30.00
	10.00 X 2.00	047437	93825	28.8	72.00
Total				40.9	102.00

  

<b>KEY TO HEAT</b>		<b>KEY TO LOT</b>
Heat Code	Heat No.	Lot Code Lot No.
047375	523476	93230 349489
047437	524070	93825 350324

  

**TEST RESULTS**  
**Chemical composition (weight%)**

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
047375	0.020	0.39	1.69	0.034	0.007	17.22	13.10	2.52
047437	0.026	0.38	1.61	0.028	0.007	17.42	13.10	2.52
	<b>N</b>							
047375	0.049							
047437	0.045							

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

**Chemical composition, product (weight%)**

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
047375	0.021	0.38	1.68	0.034	0.006	17.20	13.05	2.52
047437	0.026	0.39	1.62	0.028	0.005	17.45	13.16	2.52
	<b>N</b>							
047375	0.049							
047437	0.038							

**Tensile test at room temperature**

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
	Rp0.2	Rp1.0	Rm	A	4D
93230	296	331	605	62	58
	314	349	612	62	60
	301	335	608	60	56
93825	327	364	605	54	54
	317	351	604	58	56
	318	350	608	55	54

**Hardness test**

Lot	Min	Max
	HRB	HRB
93230	78	80
93825	77	80

**Following controls/tests have been satisfactorily performed:**

- Flattening test.
- Flaring test
- PMI-test.
- Intergranular corrosion test acc to ASTM A-262 PR.E
- Intergranular corrosion test acc. to EN ISO3651-2, Method A.
- 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 NFA 49-117 EN 10216-5 TC1 SS 2353-22  
WNR 1.4435 TP 316/TP 316L Z2CND17-13 EN 1.4435 M S PK1 10.00 X 2.00 MM HT 5234  
76 SC LOT 349489 DIN 2391 \*QA-TUBE\*  
SANDVIK 3R60 ASTM/ASME A/SA-213AW/A-269 NFA 49-117 EN 10216-5 TC1 SS 2353-22 W  
NR 1.4435 TP 316/TP 316L Z2CND17-13 EN 1.4435 M S PK1 NDE 10.00 X 2.00 MM HT 5  
24070 SC LOT 350324 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.



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The certificate is produced with EDP and valid without signature.

TEST RESULTS TRANSFERRED FROM CERTIFICATE NO 00038888  
00039471