



**CERTIFICATE**

**No. A/10-955844**

**Rev 00**

**Date 2010-04-14**

**Page 1/2**

INSPECTION CERTIFICATE acc to  
EN 10 204 3.1

Processkontroll Items AB  
Box 2088  
444 02 STORA HÖGA  
SWEDEN

INSPECTION STAMP  
QA-TUBE

Customer References		Sandvik References		
708553	Customer order 2010-04-14	Order No.	Subs No.	ABSMT Dispatch note
		193119	170080	02801/54
003-00991	ITEMS	ABSMT No.	C.Code	
		300-20530	15	

Material description	Steel/material Designations
SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING	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>
<b>Steel making process</b> Electric furnace	

**Technical requirements**  
 PED/23/EC, EN 10216-5 TC1  
 SS 219711, DIN 17458 TC1, NFA 49-117-09/85  
 ASTM A-213-08 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	Pieces	Kg	M
02	THT-3R60-20-2 20.00 X 2.00	523636	54452	7	37.0	42.00
				Total	7	37.0 42.00

**TEST RESULTS**

**Chemical composition (weight%)**

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
523636	0.016	0.38	1.63	0.031	0.009	17.26	13.07	2.59
	N							
523636	0.038							

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

Heat	C	Si	Mn	P	S	Cr	Ni	Mo
523636	0.019	0.37	1.63	0.030	0.006	17.29	13.07	2.56
	N							
523636	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"
54452	280	322	586	53	56
	283	325	589	53	55

**Hardness test**

Lot	Min	Max
	HRB	HRB
54452	75	79

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

- Flattening test.
- Ring expansion 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 W  
NR 1.4435 Z2CND17-13 EN 1.4435 TP316/316L M S PK1 NDE 20.00 X 2.00 MM HT 52363  
6 SS LOT 54452 DIN 2391 COLD \*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.