



CERTIFICATE

No. A/11-165588 Rev 00
Date 2011-05-24 Page 1/2INSPECTION CERTIFICATE acc to
EN 10 204 3.1PROCESSKONTROLL ITEMS AB
BOX 2088
444 02 STORA HÖGA
SWEDENINSPECTION STAMP
QA-TUBE

Customer References		Sandvik References	
709009	Customer order 2011-05-24	Order No. 209118	Subs No. 182478
003-00991	ITEMS	ABSMT No. 300-27322	ABSMT Dispatch note 14172/54
		C.Code 15	
Material description SEAMLESS STAINLESS COLD FINISHED HYDRAULIC TUBING		Steel/material Designations	
		Sandvik 3R60	SS 2353
		AISI TP316/TP316L	AFNOR Z2CND17-13
		W.nr 1.4435	DIN X 2 CRNIMO 18 14 3
		EN no 1.4435	
Steel making process Electric furnace			
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 15156-3:2009, HRB Max 80			
EXTENT OF DELIVERY			
It	Product designation	Heat	Lot
01	THT-3R60-20-2.5 20.00 X 2.50	524890	16299
		Pieces	Kg
		84	539.0
		M	504.00
		Total	84
		539.0	504.00
TEST RESULTS			
Chemical composition (weight%)			
Heat	C	Si	Mn
524890	0.018	0.39	1.64
	P	S	Cr
	0.026	0.008	17.32
	Ni	Mo	
	13.03	2.51	
	N		
524890	0.038		
Chemical composition, product (weight%)			
Heat	C	Si	Mn
524890	0.018	0.40	1.64
	P	S	Cr
	0.029	0.008	17.36
	Ni	Mo	
	13.14	2.54	
	N		
524890	0.034		
Quality assurance - Ulrik Rodling / QA-manager Tube & Pipe MTC Service / Certificates			



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Tensile test at room temperature

Lot	Yield strength		Tensile strength	Elongation	
	MPa	MPa	MPa	%	%
	Rp0.2	Rp1.0	Rm	A	2"
16299	270	311	582	53	55
	274	314	584	54	57
	273	316	585	54	56
	271	313	583	53	56

Hardness test

Lot	Min	Max
	HRB	HRB
16299	76	78

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 2.50 MM HT 52489
0 SS LOT 16299 DIN 2391/EN 10305-1 COLD *QA-TUBE*

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.

The certificate is produced with EDP and valid without signature.