

INSPECTION CERTIFICATE acc to EN 10 204 3.1

PG Flowteknik Scandinavia ApS

Rugvænget 19 C  
DK-2630 Tåstrup  
Denmark

r30207-1

<b>Customer references</b>		<b>Calamo References</b>	
Att	Michael Grøn	Order no	111989
Order no	PO11339	Order line	10
Package mark		Delivery No	1
		Item	0300360
<b>Product description</b>			
CALAMO TUBE 10X1 CQE 316L			
<b>Technical Specification</b>			
CALAMO PRODUCT SPECIFICATION CQE CLEANED FOR OXYGEN SERVICE (CFOS) ACC. TO ASTM G93 MAX 20 mg/m2 HYDROCARBON MACHINED ENDS. INSIDE RA <=0,4 µm (<=16 µinch). FERRITE <0,2%			
<b>Extent of delivery</b>			
<b>Quantity</b>	<b>Manufacturing no</b>	<b>Lot</b>	<b>Heat</b>
18.00 m	81758-10	HS111211	N24597
<b>Inspection and testing during manufacturing Calamo</b>			
Visual inspection		CQE 932/632	Approved
Surface roughness, Ra inside		ANSI/ASME B 46.1/ISO 4288	Approved
Cleanliness control		CQE 932/632	Approved
Final inspection		CQE 932/632	Approved
Calamo AB maintains a management system according to ISO 9001:2015 and ISO 14001:2015, certified by a notified body established within the European Community (EU) and has undergone a specific assessment for materials.			
Certification body: ISO 9001/14001: TÜV NORD UK, Notified body No. 0065. PED 2014/68/EU and AD 2000-Merkblatt W0: TÜV NORD systems GMBH & CO, Notified body No. 0045.			
Certificates: ISO 9001/14001 Certificate No. GB01933. PED 2014/68/EU Certificate No. 07/202/1326/WZ/2309/21. AD 2000-Merkblatt W0 Certificate No. 07/203/1326/WP/2309/21. The material complies with PED 2014/68/EU. Welded tubes and fittings manufactured of welded tubes are approved for category I and II . Mark of the inspection representative: Calamo QT			
The delivered products comply with the order acknowledgment.			
The material is manufactured according to a quality system, approved and registered to ISO 9001:2015.			
Steel making process: Electric Furnace			
The material is in compliance with EU Directive 2011/65EU (RoHS2)			
Quality-Daniel Skoglund / QA Manager			
The certificate is produced with EDP and valid without signature .			

**Technical performance and control/test data for prematerial**

**Lot** HS111211  
**Heat** N24597  
**Size** 10X1  
**Steel grade** W.NR 1.4404 TP316L EN 1.4404  
 SEAMLESS TUBES ACC.TO ASTM A269/A270/ASME SA213 AW/  
 EN 10216-5 TC1/AD-2000-W2 EINBAUROHRE  
 BN2/EN ISO 1127 D4/T3 BRIGHT ANNEALED COLD FINISH.

**Chemical composition, heat analysis (weight %)**

C	Si	Mn	P	S	Cr	Ni	Mo	N
0.011 %	0.44 %	0.96 %	0.029 %	0.007 %	16.74 %	12.06 %	2.03 %	0.01 %

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

C	Si	Mn	P	S	Cr	Ni	Mo	N
0.009 %	0.44 %	0.98 %	0.031 %	0.007 %	16.78 %	12.14 %	2.04 %	0.01 %

**Tensile test at room temperature**

Yield Strength Rp 0.2	Yield Strength Rp 1.0	Tensile strength Rm	Elongation A (A5)	Elongation 2" (A2)
290 N/mm2	305 N/mm2	535 N/mm2	49 %	44 %
274 N/mm2	316 N/mm2	543 N/mm2	51 %	42 %
276 N/mm2	304 N/mm2	555 N/mm2	49 %	43 %
281 N/mm2	312 N/mm2	531 N/mm2	49 %	44 %
290 N/mm2	314 N/mm2	546 N/mm2	50 %	43 %
<b>Hardness</b>				
79 HRB				
79 HRB				
79 HRB				
79 HRB				
79 HRB				

**Nondestructive testing**

Eddy current test EN	EN ISO 10893-1	Approved
Eddy current test ASTM/ASME	ASTM A1016/A1016M	Approved
Ferrite content < 0,2 %	BN2 1997	Approved
Material Identification (PMI)	EN 10216-5	Approved
Visual inspection		Approved
Dimensional control	ASTM A269/A270/SA-1016/EN ISO 1127	Approved

**Destructive testing**

Flange test	ASTM A270-S2 / SA-1016	Approved
Flattening test	ASME SA-213/EN-ISO 8492/ASTM SA-1016	Approved
Flaring test/Drift Expanding test	ASME SA213/ASTM SA-1016	Approved
Intergranular corrosion test EN	EN ISO 3651-2 Method A	Approved
Intergranular corrosion test ASTM/ASME	ASTM A 262 Practice E	Approved

**ORIGIN PREMATERIAL**

**Country of origin South Korea**

**Receiving inspection Calamo**

Visual inspection		Approved
Length		Approved
Surface roughness, Ra inside	ANSI/ASME B 46.1/ISO 4288	Approved
Angle control ends		Approved
Outside diameter min	ASTM A269/A270/EN ISO 1127 D4	Approved
Outside diameter max	ASTM A269/A270/EN ISO 1127 D4	Approved
Wall thickness min	ASTM A269/A270/EN ISO 1127 T3	Approved
Wall thickness max	ASTM A269/A270/EN ISO 1127 T3	Approved