

INSPECTION CERTIFICATE acc to EN 10 204 3.1

PG Flowteknik Scandinavia ApS

Rugvænget 19 C  
DK-2630 Tåstrup  
Denmark

| <b>Customer references</b><br>Att Michael Grøn<br>Order no PO11339<br>Package mark                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  | <b>Calamo References</b><br>Order no 111989<br>Order line 20<br>Delivery No 1<br>Item 0400440 |        |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------------------------------------------------------------------------------------|--------|------------------------------|------------------|----------|-------------------------------|------------|----------|---------------------|------------|----------|------------------|------------|----------|
| <b>Product description</b><br><br>CALAMO TUBE<br>12X1 CQ 316L                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |                                                                                               |        |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |
| <b>Technical Specification</b><br>CALAMO PRODUCT SPECIFICATION CQ<br>CLEANED FOR OXYGEN SERVICE (CFOS) ACC. TO ASTM G93<br>MAX 20 mg/m2 HYDROCARBON<br>MACHINED ENDS. Ra <= 0,8 µm.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                  |                                                                                               |        |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |
| <b>Extent of delivery</b> <table border="1"> <thead> <tr> <th>Quantity</th> <th>Manufacturing no</th> <th>Lot</th> <th>Heat</th> </tr> </thead> <tbody> <tr> <td>1200.00 m</td> <td>82520-10</td> <td>2078908-11</td> <td>566308</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                  |                                                                                               |        | Quantity                     | Manufacturing no | Lot      | Heat                          | 1200.00 m  | 82520-10 | 2078908-11          | 566308     |          |                  |            |          |
| Quantity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Manufacturing no | Lot                                                                                           | Heat   |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |
| 1200.00 m                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 82520-10         | 2078908-11                                                                                    | 566308 |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |
| <b>Inspection and testing during manufacturing Calamo</b> <table border="1"> <tbody> <tr> <td>Surface roughness, Ra inside</td> <td>CQ 832/432</td> <td>Approved</td> </tr> <tr> <td>Visual inspection/Fluoroscopy</td> <td>CQ 832/432</td> <td>Approved</td> </tr> <tr> <td>Cleanliness control</td> <td>CQ 832/432</td> <td>Approved</td> </tr> <tr> <td>Final inspection</td> <td>CQ 832/432</td> <td>Approved</td> </tr> </tbody> </table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                  |                                                                                               |        | Surface roughness, Ra inside | CQ 832/432       | Approved | Visual inspection/Fluoroscopy | CQ 832/432 | Approved | Cleanliness control | CQ 832/432 | Approved | Final inspection | CQ 832/432 | Approved |
| Surface roughness, Ra inside                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | CQ 832/432       | Approved                                                                                      |        |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |
| Visual inspection/Fluoroscopy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | CQ 832/432       | Approved                                                                                      |        |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |
| Cleanliness control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | CQ 832/432       | Approved                                                                                      |        |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |
| Final inspection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | CQ 832/432       | Approved                                                                                      |        |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |
| <p>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.</p> <p>Certification body:<br/>         ISO 9001/14001: TÜV NORD UK, Notified body No. 0065.<br/>         PED 2014/68/EU and AD 2000-Merkblatt W0: TÜV NORD systems GMBH &amp; CO, Notified body No. 0045.</p> <p>Certificates:<br/>         ISO 9001/14001 Certificate No. GB01933.<br/>         PED 2014/68/EU Certificate No. 07/202/1326/WZ/2309/21.<br/>         AD 2000-Merkblatt W0 Certificate No. 07/203/1326/WP/2309/21.<br/>         The material complies with PED 2014/68/EU.<br/>         Welded tubes and fittings manufactured of welded tubes are approved for category I and II .<br/>         Mark of the inspection representative: Calamo QT</p> <p>The delivered products comply with the order acknowledgment.</p> <p>The material is manufactured according to a quality system, approved and registered to ISO 9001:2015.</p> <p>Steel making process: Electric Furnace</p> <p>The material is in compliance with EU Directive 2011/65EU (RoHS2)</p> <p>Quality-Daniel Skoglund / QA Manager</p> <p>The certificate is produced with EDP and valid without signature .</p> |                  |                                                                                               |        |                              |                  |          |                               |            |          |                     |            |          |                  |            |          |

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

**Lot** 2078908-11  
**Heat** 566308  
**Size** 12X1  
**Steel grade** W.NR 1.4435 TP316L EN 1.4435 SS2353  
 SEAMLESS TUBES ACC.TO ASTM A269/A270/ASME SA213 AW/  
 EN 10216-5 TC1/AD-2000-W2 EINBAUOHRE/BN2/  
 EN ISO 1127 D4/T3 BRIGHT ANNEALED COLD FINISH.

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

| C       | Si     | Mn     | P       | S       | Cr      | Ni      | Mo     | N      | Ti      |
|---------|--------|--------|---------|---------|---------|---------|--------|--------|---------|
| 0.018 % | 0.53 % | 1.58 % | 0.031 % | 0.009 % | 17.28 % | 13.22 % | 2.63 % | 0.04 % | 0.003 % |

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

| C       | Si     | Mn     | P       | S       | Cr      | Ni      | Mo     |
|---------|--------|--------|---------|---------|---------|---------|--------|
| 0.019 % | 0.54 % | 1.62 % | 0.030 % | 0.007 % | 17.29 % | 13.28 % | 2.53 % |

**Tensile test at room temperature**

| Yield Strength Rp 0.2 | Yield Strength Rp 1.0 | Tensile strength Rm | Elongation A (A5) | Elongation 2" (A2) |
|-----------------------|-----------------------|---------------------|-------------------|--------------------|
| 322 N/mm2             | 352 N/mm2             | 588 N/mm2           | 64 %              | 61 %               |
| <b>Hardness</b>       |                       |                     |                   |                    |
| 74 HRB                |                       |                     |                   |                    |
| 73 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**

|                                        |                                      |          |
|----------------------------------------|--------------------------------------|----------|
| 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 Czech Republ**

**Receiving inspection Calamo**

|                              |                               |          |
|------------------------------|-------------------------------|----------|
| Visual inspection            |                               | Approved |
| Length                       |                               | Approved |
| Surface roughness, Ra inside | ANSI/ASME B 46.1/ISO 4288     | Approved |
| Angle control ends           |                               |          |
| 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 |
| Control of marking           |                               | Approved |