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| <b>Type of inspection document :</b><br>Inspection certificate acc. to EN 10204 / 3.1   | A02     | <b>Internal order No.:</b><br>50005054 - 10  | A08 |
| <b>Purchaser :</b><br>ALLEIMA BENELUX B.V.<br><br>AMUNDSENWEG 4<br>5928 LT Venlo<br>THE NETHERLANDS   | A06     | <b>Purchase order No. :</b><br><br><b>Purchaser's reference :</b><br><br><b>Project Id. :</b><br>3000035 | A07 |
| <b>Product :</b><br>Seamless cold finished tube   | B01/B04 | <b>Steel designation :</b><br>3R60 / 3R60  | B02 |
| <b>Dimension (OD x WT) :</b><br>10,00 x 1,00AW mm   | B09/B10 | <b>Melting process :</b><br>AOD  | C70 |
| <b>Technical requirements :</b><br>ASME SA213/SA213M-2023<br>ASTM A213/A213M-2022<br>ASTM A269/A269M-2015a (Reap.2019)<br>EN 10216-5 TC1 2021<br>EN 10305-1 (Only Tolerances-Table 5)<br>AD 2000 W2 Einbaurohre - 2022<br>AD 2000 W10 - 2019<br>NACE MR0175-2021/ISO 15156-3:2020, NACE MR0103/ISO 17945-1:2015<br>Alleima SPEC S-08921<br>PED 2014/68/EU |         |  | B03 |
| <b>Supplementary information :</b><br>Manufacturing of stainless steel tubes in grade 3R60 / TP316/316L / UNS S31603 / 1.4435 from steel origin:<br>Alleima Tube AB, Sweden.<br>The qualified pre-material supplier is mentioned in the section "Extent of material delivery".<br>Tube length 6000 mm (-0/+5 mm)  |         |  | B14 |
| The products, covered by this certificate, comply with specification and requirements of the order.   |         |  | Z01 |
| <b>Originator of the document :</b><br>QA - AC  | A05/Z02 | <b>Inspector's stamp:</b>  | Z03 |

### Chemical composition (Heat analysis)

| Heat   | C<br>[%]           | Si<br>[%]          | Mn<br>[%]          | P<br>[%]           | S<br>[%]           |
|--------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 570495 | max 0.030<br>0,017 | max 1.000<br>0,390 | max 2.000<br>1,690 | max 0.040<br>0,027 | max 0.015<br>0,007 |

| Heat   | Cr<br>[%]               | Ni<br>[%]               | Mo<br>[%]            | N<br>[%]           | Co<br>[%]     |
|--------|-------------------------|-------------------------|----------------------|--------------------|---------------|
| 570495 | 17.000-18.000<br>17,240 | 12.500-14.000<br>13,130 | 2.500-3.000<br>2,640 | max 0.100<br>0,045 | info<br>0,091 |

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| Heat   | Ti [%]<br>info |
|--------|----------------|
| 570495 | <0,003         |

**Product check analysis**

| Heat   | Lot        | C [%]<br>max 0.030 | Si [%]<br>max 1.000 | Mn [%]<br>max 2.000 | P [%]<br>max 0.040 | S [%]<br>max 0.015 |
|--------|------------|--------------------|---------------------|---------------------|--------------------|--------------------|
| 570495 | 2136130-11 | 0,018              | 0,390               | 1,720               | 0,025              | 0,007              |

| Heat   | Lot        | Cr [%]<br>17.000-18.000 | Ni [%]<br>12.500-14.000 | Mo [%]<br>2.500-3.000 | N [%]<br>max 0.100 |
|--------|------------|-------------------------|-------------------------|-----------------------|--------------------|
| 570495 | 2136130-11 | 17,270                  | 13,000                  | 2,630                 | 0,043              |

**Extent of material delivery**

| Heat   | Lot        | Hollow supp. | No. of HTcycles <sup>1)</sup> | Pieces | Total length [m] | Total weight [kg] <sup>2)</sup> |
|--------|------------|--------------|-------------------------------|--------|------------------|---------------------------------|
| 570495 | 2136129-11 | ALLEIMA SE   | 1                             | 622    | 3 732.000        | 835.968                         |
| 570495 | 2136130-11 | ALLEIMA SE   | 1                             | 568    | 3 408.000        | 763.392                         |
| 570495 | 2136131-11 | ALLEIMA SE   | 1                             | 547    | 3 282.000        | 735.168                         |
| 570495 | 2136132-11 | ALLEIMA SE   | 1                             | 565    | 3 390.000        | 759.360                         |
| 570495 | 2136133-11 | ALLEIMA SE   | 1                             | 516    | 3 096.000        | 693.504                         |

Note : <sup>1)</sup> Number of heat treatment cycles performed on the tubes.

<sup>2)</sup> Weight quantity is theoretically calculated, it might differ compared to shipping documents.

Chomutov, date : 5.6.2024

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**Flaring test in acc. with ASTM A 1016**

| Heat   | Lot        | ST | Test result<br>[pass/fail] |
|--------|------------|----|----------------------------|
|        |            |    | pass                       |
| 570495 | 2136129-11 |    | pass                       |
| 570495 | 2136129-11 |    | pass                       |
| 570495 | 2136130-11 |    | pass                       |
| 570495 | 2136130-11 |    | pass                       |
| 570495 | 2136131-11 |    | pass                       |
| 570495 | 2136131-11 |    | pass                       |
| 570495 | 2136132-11 |    | pass                       |
| 570495 | 2136132-11 |    | pass                       |
| 570495 | 2136133-11 |    | pass                       |
| 570495 | 2136133-11 |    | pass                       |

**Flaring test in acc. with EN 10216-5**

| Heat   | Lot        | ST | Test result<br>[pass/fail] |
|--------|------------|----|----------------------------|
|        |            |    | pass                       |
| 570495 | 2136129-11 |    | pass                       |
| 570495 | 2136130-11 |    | pass                       |
| 570495 | 2136131-11 |    | pass                       |
| 570495 | 2136132-11 |    | pass                       |
| 570495 | 2136133-11 |    | pass                       |

**Flattening test in acc. with ASTM A 1016**

| Heat   | Lot        | ST | Test result<br>[pass/fail] |
|--------|------------|----|----------------------------|
|        |            |    | pass                       |
| 570495 | 2136129-11 |    | pass                       |
| 570495 | 2136129-11 |    | pass                       |
| 570495 | 2136130-11 |    | pass                       |
| 570495 | 2136130-11 |    | pass                       |
| 570495 | 2136131-11 |    | pass                       |
| 570495 | 2136131-11 |    | pass                       |
| 570495 | 2136132-11 |    | pass                       |
| 570495 | 2136132-11 |    | pass                       |
| 570495 | 2136133-11 |    | pass                       |
| 570495 | 2136133-11 |    | pass                       |

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**Hardness test (HRB/HRC) in acc. with E18/S-08921/NACE**

| Heat   | Lot        | ST | Hardness   | Hardness ≤22HRC |
|--------|------------|----|------------|-----------------|
|        |            |    | [HRB]      | [yes/no]        |
|        |            |    | max 80,000 | yes             |
| 570495 | 2136129-11 |    | 72,000     | yes             |
| 570495 | 2136129-11 |    | 71,000     | yes             |
| 570495 | 2136130-11 |    | 72,000     | yes             |
| 570495 | 2136130-11 |    | 71,000     | yes             |
| 570495 | 2136131-11 |    | 72,000     | yes             |
| 570495 | 2136131-11 |    | 73,000     | yes             |
| 570495 | 2136132-11 |    | 74,000     | yes             |
| 570495 | 2136132-11 |    | 74,000     | yes             |
| 570495 | 2136133-11 |    | 74,000     | yes             |
| 570495 | 2136133-11 |    | 75,000     | yes             |

**Intergranular corrosion testing in acc. with ASTM A262E**

| Heat   | Lot        | ST | Test result |
|--------|------------|----|-------------|
|        |            |    | [pass/fail] |
|        |            |    | pass        |
| 570495 | 2136129-11 |    | pass        |
| 570495 | 2136130-11 |    | pass        |
| 570495 | 2136131-11 |    | pass        |
| 570495 | 2136132-11 |    | pass        |
| 570495 | 2136133-11 |    | pass        |

**Intergranular corrosion testing in acc. with EN ISO 3651-2/A**

| Heat   | Lot        | ST | Test result |
|--------|------------|----|-------------|
|        |            |    | [pass/fail] |
|        |            |    | pass        |
| 570495 | 2136129-11 |    | pass        |
| 570495 | 2136130-11 |    | pass        |
| 570495 | 2136131-11 |    | pass        |
| 570495 | 2136132-11 |    | pass        |
| 570495 | 2136133-11 |    | pass        |

**Longitudinal tensile test in acc. with A370 / EN ISO 6892-1**

| Heat   | Lot        | ST | Rp0,2       | Rm              | A2"        | A5         | Rp1,0       |
|--------|------------|----|-------------|-----------------|------------|------------|-------------|
|        |            |    | [MPa]       | [MPa]           | [%]        | [%]        | [MPa]       |
|        |            |    | min 220,000 | 515,000-690,000 | min 35,000 | min 40,000 | min 250,000 |
| 570495 | 2136129-11 |    | 307,200     | 574,300         | 52,000     | 60,700     | 335,500     |
| 570495 | 2136130-11 |    | 296,400     | 581,500         | 45,000     | 51,300     | 327,800     |
| 570495 | 2136131-11 |    | 302,100     | 565,000         | 46,000     | 56,700     | 329,400     |
| 570495 | 2136132-11 |    | 305,900     | 574,300         | 51,400     | 59,000     | 333,100     |
| 570495 | 2136133-11 |    | 318,500     | 583,700         | 50,000     | 57,300     | 348,500     |

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### Microstructure evaluation and Grain size WI-3815/ASTM E112

The structure is free from grain boundary chromium carbide precipitations.

| Heat   | Lot        | ST | G.B.Cr.Carbides | Grain size   |
|--------|------------|----|-----------------|--------------|
|        |            |    | [No/Yes]        | [(G)]        |
|        |            |    | No              | 5,000-14,000 |
| 570495 | 2136129-11 |    | No              | 6,000        |
| 570495 | 2136130-11 |    | No              | 7,000        |
| 570495 | 2136131-11 |    | No              | 6,000        |
| 570495 | 2136132-11 |    | No              | 7,000        |
| 570495 | 2136133-11 |    | No              | 6,000        |

### Dimensional check

Test results comply with specified criteria.

### HT - Final heat treatment of straight tubes

Bright annealing at 1150°C with min. 0,25 minute holding time.

Quenched by forced cooled inert gas.

### Inside cleanliness check

Test results comply with specified criteria.

### NDT - Eddy current flaw detection in acc. E426/EN ISO 10893-1

Test results comply with specified criteria.

### NDT - Visual inspection

Test results comply with specified criteria.

### PMI - 100% positive material identification

Test results comply with specified criteria.

### Statement

The raw material is free from radioactive contamination.

### Statement

Material free from mercury and asbestos contamination.

### Statement

The material have been manufactured within the scope of certified Quality Management System maintained in accordance with EN ISO 9001:2015.

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**Straightness check**

Test results comply with specified criteria.