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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|----------------------------------------------|--------------|----------|------|-----------------------------|----------------------------------------------|----------------------------|---------------------------------------------------------|-----------------------------------------------------|------------------------------------|----------------------------------------------|--------------|---------|------------|-----------|----------|----------|---------|----------|-----------|---|----------|----------|----|
| <div>Datasheet:</div> <div>EN 1.4307/304L – Austenite Sqaure Bars - Stainless Steel</div> <div>Alumeco ApS<br/>05-12-2024</div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                              |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <div>Internal alloy name: 1.4307</div> <div>Alloy type: Austenite<br/>Chemical Symbol: X2CrNi18-9</div> <div>EN: EN 1.4307<br/>AISI: 304L<br/>UNS: S30403<br/>SS: 2352<br/>JIS: SUS304L<br/>GB: S30403</div> |                                    |                                              |              |          |      |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |
| <div>Main usage:</div> <div><ul style="list-style-type: none"><li>Food and beverage industry equipment</li><li>Chemical and pharmaceutical industry equipment</li><li>Heat exchangers</li><li>Storage tanks and containers</li><li>Pipes</li><li>Flanges and valves</li></ul></div>                                                                                                                                                                                                                                                                                                                                                              |                                              |                            | <div>Important norms and literature:</div> <div><div>General Standards:<br/>EN 10088-1: List of stainless Steel</div><div>Product standards:<br/>EN 10088-3: Technical delivery conditions for semi-finished products, bars, rods, wire, sections and bright products of corrosion resisting steels for general purposes</div><div>Geometric Tolerance:<br/>EN 10059: Hot rolled square steel bars for general purposes - Dimensions &amp; tolerances on shape &amp; dimensions.<br/><br/>EN 10278: Dimensions &amp; tolerances of bright steel products</div></div> |                                                                                                                                                                                                              |                                    |                                              |              |          |      |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |
| <div>Main properties:</div> <div><ul style="list-style-type: none"><li>Excellent weldability</li><li>Good stability against corrosion</li><li>Good formability, both cold and hot</li><li>Resistance to intergranular corrosion (EN 10088-3)</li></ul></div>                                                                                                                                                                                                                                                                                                                                                                                     |                                              |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                              |                                    |                                              |              |          |      |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |
| <div>Chemical composition in %: EN 10088-1</div> <table><tr><td>C</td><td>Si</td><td>Mn</td><td>P</td><td>S</td><td>Cr</td><td>Cu</td><td>Ni</td><td>Remarks</td><td>Rest</td></tr><tr><td>≤ 0,030</td><td>≤ 1,00</td><td>≤ 2,00</td><td>≤ 0,045</td><td>≤ 0,030*</td><td>17,5-19,5</td><td>-</td><td>8,0-10,5</td><td>N ≤ 0,10</td><td>Fe</td></tr></table> <div>* For machinability, a controlled sulfur content of 0,015%-0,030% is recommended &amp; permitted. For weldability a controlled sulfur content of 0,008%- 0,030% is recommended &amp; permitted. For polishability, a controlled sulfur content of 0,015% is recommended.</div> |                                              |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                              |                                    |                                              |              |          |      | C                           | Si                                           | Mn                         | P                                                       | S                                                   | Cr                                 | Cu                                           | Ni           | Remarks | Rest       | ≤ 0,030   | ≤ 1,00   | ≤ 2,00   | ≤ 0,045 | ≤ 0,030* | 17,5-19,5 | - | 8,0-10,5 | N ≤ 0,10 | Fe |
| C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Si                                           | Mn                         | P                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | S                                                                                                                                                                                                            | Cr                                 | Cu                                           | Ni           | Remarks  | Rest |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |
| ≤ 0,030                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ≤ 1,00                                       | ≤ 2,00                     | ≤ 0,045                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | ≤ 0,030*                                                                                                                                                                                                     | 17,5-19,5                          | -                                            | 8,0-10,5     | N ≤ 0,10 | Fe   |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |
| <div>Mechanical properties: EN 10088-3</div> <table><tr><td>Dim. Range / Thickness (mm)</td><td>Temper</td><td>Rm MPa</td><td>Rp<sub>0,2</sub> MPa</td><td>Rp<sub>1,0</sub> MPa</td><td>Elongation (Longitudinal) A%</td><td>Impact energy (Longitudinal) KV<sub>2</sub></td><td>Hardness* HB</td></tr><tr><td>10-100</td><td>Hot rolled</td><td>500 - 700</td><td>Min. 220</td><td>Min. 250</td><td>45</td><td>100</td><td>Max. 215</td></tr></table> <div>* Information values only;</div>                                                                                                                                                     |                                              |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                              |                                    |                                              |              |          |      | Dim. Range / Thickness (mm) | Temper                                       | Rm MPa                     | Rp <sub>0,2</sub> MPa                                   | Rp <sub>1,0</sub> MPa                               | Elongation (Longitudinal) A%       | Impact energy (Longitudinal) KV <sub>2</sub> | Hardness* HB | 10-100  | Hot rolled | 500 - 700 | Min. 220 | Min. 250 | 45      | 100      | Max. 215  |   |          |          |    |
| Dim. Range / Thickness (mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Temper                                       | Rm MPa                     | Rp <sub>0,2</sub> MPa                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rp <sub>1,0</sub> MPa                                                                                                                                                                                        | Elongation (Longitudinal) A%       | Impact energy (Longitudinal) KV <sub>2</sub> | Hardness* HB |          |      |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |
| 10-100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Hot rolled                                   | 500 - 700                  | Min. 220                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Min. 250                                                                                                                                                                                                     | 45                                 | 100                                          | Max. 215     |          |      |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |
| <div>Physical properties:</div> <table><tr><td>Density g/cm<sup>3</sup></td><td>Electrical resistivity Ω mm<sup>2</sup> / m</td><td>Thermal conductivity W/m K</td><td>Thermal expansion (µm m<sup>-1</sup> K<sup>-1</sup>)</td><td>Specific heat (J kg<sup>-1</sup> K<sup>-1</sup>)</td><td>E - modulus (N / mm<sup>2</sup>)</td><td>Magnetizable</td><td>PREN (Min.)</td></tr><tr><td>7,9</td><td>0,73</td><td>15</td><td>16,0</td><td>500</td><td>200.000</td><td>No</td><td>17,5</td></tr></table>                                                                                                                                           |                                              |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                              |                                    |                                              |              |          |      | Density g/cm <sup>3</sup>   | Electrical resistivity Ω mm <sup>2</sup> / m | Thermal conductivity W/m K | Thermal expansion (µm m <sup>-1</sup> K <sup>-1</sup> ) | Specific heat (J kg <sup>-1</sup> K <sup>-1</sup> ) | E - modulus (N / mm <sup>2</sup> ) | Magnetizable                                 | PREN (Min.)  | 7,9     | 0,73       | 15        | 16,0     | 500      | 200.000 | No       | 17,5      |   |          |          |    |
| Density g/cm <sup>3</sup>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Electrical resistivity Ω mm <sup>2</sup> / m | Thermal conductivity W/m K | Thermal expansion (µm m <sup>-1</sup> K <sup>-1</sup> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Specific heat (J kg <sup>-1</sup> K <sup>-1</sup> )                                                                                                                                                          | E - modulus (N / mm <sup>2</sup> ) | Magnetizable                                 | PREN (Min.)  |          |      |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |
| 7,9                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0,73                                         | 15                         | 16,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 500                                                                                                                                                                                                          | 200.000                            | No                                           | 17,5         |          |      |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |
| <div>Typical Alumeco products with this alloy</div> <div><ul style="list-style-type: none"><li>Square Bars - Dim: 10-100 mm x Length: 3000 mm</li></ul></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                              |                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                              |                                    |                                              |              |          |      |                             |                                              |                            |                                                         |                                                     |                                    |                                              |              |         |            |           |          |          |         |          |           |   |          |          |    |

## Tolerances for square bars for EN 1.4307:

| Tolerances classes   |                           |              |
|----------------------|---------------------------|--------------|
| Diameter<br>$d$ (mm) | Deviation for drawn flats |              |
|                      | H11                       | H12          |
| $10 < d \leq 18$     | +0<br>-0,110              | +0<br>-0,180 |
| $18 < d \leq 30$     | +0<br>-0,130              | +0<br>-0,210 |
| $30 < d \leq 40$     | +0<br>-0,160              | +0<br>-0,250 |
| $40 < d \leq 50$     | +0<br>-0,160              | +0<br>-0,250 |
| $50 < d \leq 65$     | +0<br>-0,190              | +0<br>-0,300 |
| $65 < d \leq 80$     | +0<br>-0,190              | +0<br>-0,300 |
| $80 < d \leq 100$    | +0<br>-0,220              | +0<br>-0,350 |

\* Values are referred from Table 2 of EN 10278:1999

| Deviation from straightness |                                                               |                   |                     |
|-----------------------------|---------------------------------------------------------------|-------------------|---------------------|
| Product form                | Steel group                                                   | Nominal dimension | Deviation max. (mm) |
| Squares                     | < 0,25% C                                                     | $d \leq 75$ mm    | 1,0                 |
|                             | $\geq 0,25\%$ C, alloy steels, quenched and tempered steels   |                   | 2,0                 |
|                             | Stainless steels, ball and roller bearing steels, tool steels |                   | 1,0                 |
|                             | < 0,25% C                                                     | $d > 75$ mm       | 1,5                 |
|                             | $\geq 0,25\%$ C, alloy steels, quenched and tempered steels   |                   | 2,5                 |
|                             | Stainless steels, ball and roller bearing steels, tool steels |                   | 1,5                 |

\* Values are referred from Table 4 of EN 10278:1999

| Types of length and length tolerances |                          |                                                                                                                        |
|---------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------|
| Type of length                        | Length range (mm)        | Limit deviation (mm)                                                                                                   |
| Manufacturing length (M)              | $3000 < L \leq 13000$    | 10% of bars supplied may be below the minimum for the ordered range but not less than 75% of the minimum of the range. |
| Fixed length (F)                      | $3000 < L \leq 13000$    | $\pm 100$                                                                                                              |
| Exact length (E)                      | < 6000                   | $\pm 25$                                                                                                               |
|                                       | $6000 \leq L \leq 13000$ | $\pm 50$                                                                                                               |

\* Values are referred from Table 5 of EN 10059:2003