Excalibur® 316/316L-15, -16, -17

316/316L-15: AWS E316-15/E316L-15; 316/316L-16: AWS E316-16/E316L-16; 316/316L-17: AWS E316-17/E316L-17

**KEY FEATURES**

- Q2 Lot® - Certificate showing actual deposit chemistry and calculated ferrite number (FN) available online
- Designed with low carbon levels to help eliminate carbide precipitation in high temperature service
- Molybdenum grade for increased corrosion resistance
- **316/316L-15**
  - Flux coating is fast freezing for vertical down welding and slag is self-peeling for easy removal
  - Smooth bead appearance with evenly spaced ripples and flat face
- **316/316L-16**
  - Flux coating provides smooth arc transfer and slag is self-peeling for easy removal
- **316/316L-17**
  - Flux coating provides smooth arc transfer in the flat and horizontal positions and slag is self-peeling for easy removal

**APPLICATIONS**

- Molybdenum bearing austenitic stainless steels
- Type 316 and 316L

**WELDING POSITIONS**

- **316/316L-15**
  - All
- **316/316L-16**
  - All, except vertical down
- **316/316L-17**
  - Flat & Horizontal

**CONFORMANCES**

- **AWS A5.4/A5.4M: 2006:**
  - 316/316L-15
  - 316/316L-16
  - 316/316L-17
- **ASME SFA-A5.4:**
  - Same as Above
- **ABS:**
  - 316/316L-15
  - 316/316L-16
- **CWB/CSA W48-06:**
  - 316/316L-15
  - 316/316L-16
  - 316/316L-17
- **MIL-E-22000/2:**
  - 316/316L-15
  - 316/316L-16
  - MIL-316-16, MIL-316L-16

**DIAMETERS / PACKAGING**

<table>
<thead>
<tr>
<th>Diameter in (mm)</th>
<th>Length in (mm)</th>
<th>8 lb (3.6 kg) Easy Open Can</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/32 (2.4)</td>
<td>12 (300)</td>
<td>ED033108 ED033109</td>
</tr>
<tr>
<td>1/8 (3.2)</td>
<td>14 (350)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Diameter in (mm)</th>
<th>Length in (mm)</th>
<th>10 lb (4.5 kg) Easy Open Can</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/8 (3.2)</td>
<td>14 (350)</td>
<td>ED033105 ED033111</td>
</tr>
<tr>
<td>5/32 (4.0)</td>
<td>14 (350)</td>
<td>ED033106 ED033110</td>
</tr>
<tr>
<td>3/16 (4.8)</td>
<td>14 (350)</td>
<td>ED033107 ED033110</td>
</tr>
</tbody>
</table>
THE LINCOLN ELECTRIC COMPANY

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MECHANICAL PROPERTIES – As Required per AWS A5.4/A5.4M: 2006

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Yield Strength (ksi)</th>
<th>Tensile Strength (ksi)</th>
<th>Elongation (%)</th>
<th>Ferrite Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AWS E316L-15, -16, -17</td>
<td>Not Specified</td>
<td>520 (75) min.</td>
<td>30 min.</td>
<td>Not Specified</td>
</tr>
<tr>
<td>Typical Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>As-Welded</td>
<td>470 (68)</td>
<td>620 (90)</td>
<td>38</td>
<td>4 - 12</td>
</tr>
<tr>
<td>316/316L-15</td>
<td>425 - 450 (62 - 65)</td>
<td>560 - 585 (81 - 85)</td>
<td>40 - 54</td>
<td>8 - 13</td>
</tr>
<tr>
<td>316/316L-16</td>
<td>470 (68)</td>
<td>585 (85)</td>
<td>45</td>
<td>13</td>
</tr>
<tr>
<td>316/316L-17</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Typical all weld metal. **Measured with 0.2% offset. ‡See test results disclaimer below. §AWS Requirement for E316L-15, -16, -17 is 0.08% max. carbon.

TYPICAL OPERATING PROCEDURES

<table>
<thead>
<tr>
<th>Polarity</th>
<th>3/32 in (2.4 mm)</th>
<th>1/8 in (3.2 mm)</th>
<th>5/32 in (4.0 mm)</th>
<th>3/16 in (4.8 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC+</td>
<td>60 - 70</td>
<td>90 - 100</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>316/316L-16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC+ / AC</td>
<td>40 - 70</td>
<td>60 - 100</td>
<td>90 - 140</td>
<td>120 - 185</td>
</tr>
<tr>
<td>316/316L-16</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DC+ / AC</td>
<td>40 - 80</td>
<td>75 - 110</td>
<td>95 - 150</td>
<td>130 - 200</td>
</tr>
</tbody>
</table>

NOTE: Preferred polarity is listed first.

Material Safety Data Sheets (MSDS) and Certificates of Conformance are available on our website at www.lincolnelectric.com

TEST RESULTS

Test results for mechanical properties, deposit or electrode composition and diffusible hydrogen levels were obtained from a weld produced and tested according to prescribed standards, and should not be assumed to be the expected results in a particular application or weldment. Actual results will vary depending on many factors, including, but not limited to, weld procedure, plate chemistry and temperature, weldment design and fabrication methods. Users are cautioned to confirm by qualification testing, or other appropriate means, the suitability of any welding consumable and procedure before use in the intended application.

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