Nickel Alloy-Based Filler Metal

MIL-E-21562E(SH) Military Specification Electrodes & Rods – Welding, Bare, Nickel Alloy
A-A-51173 Commercial Item Description Rods & Electrodes, Welding, Bare, Nickel & Nickel Alloy

Synonyms: INCONEL®, Monel®, INCO-WELD®, NI-ROD®, HAYNES® N-61 RTW™, HASTELLOY®, INWELD®

Typical Certifications for Chemical Analysis & Mechanical Properties Included.
Actual Certifications available for additional charge...

Nickel 60 EN60/ RN60 Filler Metal
AWS A5.14 ERNiCu-7
ERNiCu-7 is used for joining base materials such as UNS number N04400, number N04405, and number N05500. This includes ASTM grades such as B127, B163, B164, B165, and B564. This alloy can also be used for dissimilar welding applications using various nickel-copper alloys to nickel 200 and to copper-nickel alloys. This alloy can be used to overlay over carbon steel, provided a buffer layer of ERNi-1 is used for the first layer.

Nickel 61 EN61/ RN61 Filler Metal
AWS A5.14 ERNi-1 (UNS N02061)
ERNi-1 nickel alloy bare wire is used for joining nickel 200 and nickel 201. This includes ASTM grades such as B160 – B163, B725 and B730. This alloy is useful in a variety of dissimilar applications between nickel alloys to stainless or ferritic steels. This versatile alloy is also used for overlaying carbon steel and in repairing cast iron castings.

Nickel 62 EN62/ RN62 Filler Metal
AWS A5.14 ERNiCrFe-5
ERNiCrFe-5 is a nickel-chromium-iron filler metal used for MIG, TIG, Plasma Arc and Submerged Arc welding on base metal that has a maximum thickness of 2”. (For sections thicker than 2”use Nickel 82). The columbium (Cb) content of Nickel 62 is intended to minimize cracking where high welding stresses are encountered which generally occur when welding thicker sections under 2”. The weld metal will exhibit the same high temperature strength and oxidation resistance as the base metal. Nearest coated electrode equivalent is ENiCrFe-1.

Nickel 67 EN67/ RN67 Filler Metal
AWS A5.7 ERCuNi
A-A-51173 Type I
ERCuNi is used for joining base materials such as UNS number C71500. This includes ASTM grades such as B111, B122, B151, B171, B359, B395, B432, B466, B467, B543, and B552. This alloy can be used for dissimilar welding applications welding various copper-nickel alloys to nickel alloys and various other copper-nickel alloys. ERCuNi is occasionally used for overlay on carbon steel, but can only be used after applying a layer of ERNi-1 first.

Nickel 82 EN82/ RN82 Filler Metal
AWS A5.14 ERNiCr-3
A-A-51173 Type I
ERNiCr-3 nickel alloy bare wire is used for joining base materials such as UNS number N06600. This includes ASTM grades B163, B166, B167, and B168. This alloy can also be used for dissimilar welding using various nickel alloys to stainless steels or carbon steels, as well as for overlaying carbon steels. Also used for welding 9% nickel steels to one another having high impact strength at low temperatures. This versatile alloy has high strength and good corrosion resistance, with oxidation resistance and creep rupture strength at elevated temperatures.

### Mechanical Properties

<table>
<thead>
<tr>
<th>Alloy</th>
<th>Classification</th>
<th>MIL-E-21562E(SH)</th>
<th>Tensile Strength</th>
<th>Elongation (4X) Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>60</td>
<td>ERNiCu-7</td>
<td>EN60/ RN60</td>
<td>70,000 PSI</td>
<td>30%</td>
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<tr>
<td>61</td>
<td>ERNi-1</td>
<td>EN61/ RN61</td>
<td>60,000 PSI</td>
<td>20%</td>
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<tr>
<td>62</td>
<td>ERNiCrFe-5</td>
<td>EN62/ RN62</td>
<td>80,000 PSI</td>
<td>30%</td>
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<tr>
<td>67</td>
<td>ERCuNi</td>
<td>EN67/ RN67</td>
<td>50,000 PSI</td>
<td>30%</td>
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<tr>
<td>82</td>
<td>ERNiCr-3</td>
<td>EN82/ RN82</td>
<td>80,000 PSI</td>
<td>30%</td>
</tr>
</tbody>
</table>

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