FERRY® alloy (W. Nr. 2.0842) is a copper-nickel alloy used mainly for its electrical properties. It has medium-range electrical resistivity and a very low temperature coefficient of resistance (TCR). The low TCR makes the alloy useful for wire-wound precision resistors having operating temperatures up to 750°F (400°C). A reproducible electromotive force against copper makes the alloy suitable for thermocouples and thermocouple compensating leads.

**Physical Constants & Thermal Properties**

<table>
<thead>
<tr>
<th>Table 2 - Physical Constants &amp; Thermal Properties</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Density, lb/in³</strong> ..................................................0.321</td>
</tr>
<tr>
<td><strong>g/cm³</strong> ..............................................................8.89</td>
</tr>
<tr>
<td><strong>Melting Range, °F</strong> ..................................................2230-2320</td>
</tr>
<tr>
<td><strong>°C</strong> ...............................................................1220-1270</td>
</tr>
<tr>
<td><strong>Specific Heat, Btu/lb•°F</strong> ......................................0.094</td>
</tr>
<tr>
<td><strong>J/kg•°K</strong> ............................................................394</td>
</tr>
</tbody>
</table>
| **Temp. Coefficient of Resistance,**
  68-212°F, 10⁻⁶ ohm/ohm•°F ....................................17 |
| 20-100°C, 10⁻⁶ ohm/ohm•°C .....................................30 |
| **Coefficient of Expansion,**
  68-212°F, 10⁻⁶ in/in•°F ...........................................8.17 |
| 20-100°C, 10⁻⁶ µm/m•°C ............................................14.7 |
| **Thermal Conductivity,**
  Btu/in•h•°F ......................................................155 |
| W/m•°C ..............................................................22.4 |
| **Electrical Resistivity,**
  ohm•circ mil/ft ..................................................295 |
| µohm•m ..........................................................0.490 |

+Reference to the ‘balance’ of a composition does not guarantee this is exclusively of the element mentioned but that it predominates and others are present only in minimal quantities.

**Typical Mechanical Properties**

<table>
<thead>
<tr>
<th>Table 3 - Typical Mechanical Properties of Annealed FERRY alloy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tensile Strength, ksi</strong> ...............................................60</td>
</tr>
<tr>
<td><strong>MPa</strong> ..............................................................415</td>
</tr>
<tr>
<td><strong>Yield Strength (0.5% Offset), ksi</strong> ...................................21</td>
</tr>
<tr>
<td><strong>MPa</strong> ..............................................................145</td>
</tr>
<tr>
<td><strong>Elongation, %</strong> ..........................................................32</td>
</tr>
</tbody>
</table>

**Available Products and Specifications**

FERRY alloy is designated W. Nr. 2.0842 and is available as strip and wire.

Major specifications:
- ASTM B 267
- DIN 17644

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