LEONI Histral®
High strength alloys

**Histral® R15**

**Description**
- Copper based resistance alloy
- CuSn6
- Bronze 6

**Available**
- Coating: Bare, Silver, Nickel, Tin, Gold
- Temper: Soft or hard
- Single end conductors
- Stranded conductors
- Bunched conductors
- Concentric lay conductors
- Single end size ≥ 0.05 mm (AWG 44)
- Other diameters or special constructions are available

**Specifications**
- EN 12166
- DIN CEN/TS 13388

**Properties**
- ✔ Medium electrical conductivity
- ✔ Excellent mechanical properties
- ✔ The material is compliant to RoHS and REACh**

**Applications**
- ✔ Heating elements with low heating conductor temperature
- ✔ Industrial applications as resistance wires
- ✔ Enamelled wire with increased mechanical properties

<table>
<thead>
<tr>
<th>Nominal values</th>
<th>Soft</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistivity* [Ohm mm²/m]</td>
<td>0.1110</td>
<td>0.1330</td>
</tr>
<tr>
<td>Electrical Conductivity* [% IACS]</td>
<td>15</td>
<td>13</td>
</tr>
<tr>
<td>Tensile Strength* [N/mm²]</td>
<td>380</td>
<td>690</td>
</tr>
<tr>
<td>Elongation* [%]</td>
<td>30</td>
<td>1</td>
</tr>
<tr>
<td>Temperature Coefficient of Resistance [1/°C]</td>
<td>0.00065</td>
<td>0.00065</td>
</tr>
<tr>
<td>Density [g/cm³]</td>
<td>8.8</td>
<td>8.8</td>
</tr>
</tbody>
</table>

* Data depend on coating conditions, degree of cold working and thermal treatments during manufacturing process

** Further information can be found on our website at www.leoni-special-conductors.com

E-mail special-conductors@leoni.com
LEONI Histral®
High strength alloys

Histral® R20

Description
Pure nickel
Ni99.6

Available
Coating: Bare
Temper: Soft or hard
Single end conductors
Stranded conductors
Bunched conductors
Concentric lay conductors
Single end size 0.15 mm to 0.51 mm (AWG34 to AWG24)
Other diameters or special constructions are available

Specifications
DIN 17740

Properties
✔ Medium electrical conductivity
✔ Outstanding mechanical properties
✔ Very good temperature resistance
✔ High Temperature Coefficient of Resistance
✔ Excellent corrosion resistance
✔ The material is compliant to RoHS and REACh**

Applications
✔ Control elements in extremely thermosensitive areas
✔ Industrial applications as resistance wires
✔ Components for light bulbs and electron tubes
✔ Maximum operating temperature 600 °C
✔ Heating elements
✔ Leads for heating conductors
✔ Electrical resistors
✔ Corrosion resistant components

Nominal values

<table>
<thead>
<tr>
<th></th>
<th>Soft</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistivity* [Ohm mm²/m]</td>
<td>0.0800</td>
<td>0.0840</td>
</tr>
<tr>
<td>Electrical Conductivity* [% IACS]</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>Tensile Strength* [N/mm²]</td>
<td>380</td>
<td>760</td>
</tr>
<tr>
<td>Elongation* [%]</td>
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<td>1</td>
</tr>
<tr>
<td>Temperature Coefficient of Resistance [1/°C]</td>
<td>0.00600</td>
<td>0.00600</td>
</tr>
<tr>
<td>Density [g/cm³]</td>
<td>8.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

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Within the tolerances set by RoHS and REACh

E-mail special-conductors@leoni.com
LEONI Histral®
High strength alloys

Histral® R51

Description
Copper based resistance alloy
CuNi2

Available
Coating: Bare, Silver, Nickel, Tin, Gold
Temper: Soft or hard
Single end conductors
Stranded conductors
Bunched conductors
Concentric lay conductors
Single end size ≥ 0.05 mm (AWG 44)
Other diameters or special constructions are available

Specifications
DIN 17471

Properties
✔ Medium electrical conductivity
✔ The material is compliant to RoHS and REACh**

Applications
✔ Heating elements with low heating conductor temperature
✔ Industrial applications as resistance wires
✔ Maximum operating temperature 300 °C
✔ Enamelled wires

Nominal values

<table>
<thead>
<tr>
<th></th>
<th>Soft</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistivity [Ohm mm²/m]</td>
<td>0.0500</td>
<td>0.0500</td>
</tr>
<tr>
<td>Electrical Conductivity [% IACS]</td>
<td>35</td>
<td>34</td>
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<tr>
<td>Tensile Strength [N/mm²]</td>
<td>220</td>
<td>480</td>
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<tr>
<td>Elongation [%]</td>
<td>18</td>
<td>1</td>
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<tr>
<td>Temperature Coefficient of Resistance [1/°C]</td>
<td>0.00130</td>
<td>0.00130</td>
</tr>
<tr>
<td>Density [g/cm³]</td>
<td>8.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

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Within the tolerances set by RoHS and REACh
LEONI Histral®
High strength alloys

Histral® R53

**Description**
Copper based resistance alloy
CuNi6

**Available**
Coating: Bare, Silver, Nickel, Tin, Gold
Temper: Soft or hard
Single end conductors
Stranded conductors
Bunched conductors
Concentric lay conductors
Single end size ≥ 0.05 mm (AWG 44)
Other diameters or special constructions are available

**Specifications**
DIN 17471

**Properties**
- ✔ Medium electrical conductivity
- ✔ The material is compliant to RoHS and REACh**

**Applications**
- ✔ Heating elements with low heating conductor temperature
- ✔ Industrial applications as resistance wires
- ✔ Maximum operating temperature 300 °C
- ✔ Enamelled wires with increased mechanical properties

**Nominal values**

<table>
<thead>
<tr>
<th></th>
<th>Soft</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistivity* [Ohm mm²/m]</td>
<td>0.1000</td>
<td>0.1000</td>
</tr>
<tr>
<td>Electrical Conductivity* [% IACS]</td>
<td>17</td>
<td>17</td>
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<tr>
<td>Tensile Strength* [N/mm²]</td>
<td>250</td>
<td>520</td>
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<tr>
<td>Elongation* [%]</td>
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<tr>
<td>Temperature Coefficient of Resistance [1/°C]</td>
<td>0.00072</td>
<td>0.00072</td>
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<tr>
<td>Density [g/cm³]</td>
<td>8.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

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Within the tolerances set by RoHS and REACh
LEONI Histral®
High strength alloys

Histral® R54

Description
Copper based resistance alloy
CuNi10

Available
Coating: Bare, Silver, Nickel, Tin, Gold
Temper: Soft or hard
Single end conductors
Stranded conductors
Bunched conductors
Concentric lay conductors
Single end size ≥ 0.05 mm (AWG 44)
Other diameters or special constructions are available

Specifications
DIN 17471

Properties
✓ Low electrical conductivity
✓ The material is compliant to RoHS and REACh**

Applications
✓ Heating elements with low heating conductor temperature
✓ Industrial applications as resistance wires
✓ Maximum operating temperature 400 °C
✓ Enamelled wires with increased mechanical properties

Nominal values
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Resistivity* [Ohm mm²/m]</td>
<td>0.1500</td>
<td>0.1500</td>
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<tr>
<td>Electrical Conductivity* [% IACS]</td>
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<td>11</td>
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<tr>
<td>Tensile Strength* [N/mm²]</td>
<td>290</td>
<td>560</td>
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<tr>
<td>Elongation* [%]</td>
<td>20</td>
<td>1</td>
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<tr>
<td>Temperature Coefficient of Resistance [1/°C]</td>
<td>0.00040</td>
<td>0.00040</td>
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<tr>
<td>Density [g/cm³]</td>
<td>8.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

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Within the tolerances set by RoHS and REACh

E-mail special-conductors@leoni.com
LEONI Histral®
High strength alloys

Histral® R55

Description
Copper based resistance alloy
CuNi23Mn

Available
Coating: Bare, Silver, Nickel, Tin, Gold
Temper: Soft or hard
Single end conductors
Stranded conductors
Bunched conductors
Concentric lay conductors
Single end size ≥ 0.05 mm (AWG 44)
Other diameters or special constructions are available

Specifications
DIN 17471

Properties
✔ Low electrical conductivity
✔ The material is compliant to RoHS and REACh**

Applications
✔ Heating elements
✔ Electrical resistors
✔ Industrial applications as resistance wires
✔ Maximum operating temperature 500 °C

Nominal values

<table>
<thead>
<tr>
<th></th>
<th>Soft</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistivity* [Ohm mm²/m]</td>
<td>0.3000</td>
<td>0.3000</td>
</tr>
<tr>
<td>Electrical Conductivity* [% IACS]</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Tensile Strength* [N/mm²]</td>
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<td>650</td>
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<tr>
<td>Elongation* [%]</td>
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<td>1</td>
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<tr>
<td>Temperature Coefficient of Resistance [1/°C]</td>
<td>0.00018</td>
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<tr>
<td>Density [g/cm³]</td>
<td>8.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

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Within the tolerances set by RoHS and REACh
LEONI Histral®
High strength alloys

Histral® R56

Description
Copper based resistance alloy
CuNi30Mn

Available
Coating: Bare, Silver, Nickel, Tin, Gold
Temper: Soft or hard
Single end conductors
Stranded conductors
Bunched conductors
Concentric lay conductors
Single end size ≥ 0.05 mm (AWG 44)
Other diameters or special constructions are available

Specifications
DIN 17471

Properties
✔ Low electrical conductivity
✔ The material is compliant to RoHS and REACh**

Applications
✔ Heating elements
✔ Electrical resistors
✔ Industrial applications as resistance wires
✔ Maximum operating temperature 500 °C

Nominal values

<table>
<thead>
<tr>
<th></th>
<th>Soft</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistivity* [Ohm mm²/m]</td>
<td>0.4000</td>
<td>0.4000</td>
</tr>
<tr>
<td>Electrical Conductivity* [% IACS]</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Tensile Strength* [N/mm²]</td>
<td>400</td>
<td>700</td>
</tr>
<tr>
<td>Elongation* [%]</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>Temperature Coefficient of Resistance [1/°C]</td>
<td>0.00010</td>
<td>0.00010</td>
</tr>
<tr>
<td>Density [g/cm³]</td>
<td>8.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

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LEONI Histral®
High strength alloys

Histral® R59

Description
Copper based resistance alloy
CuNi44
Constantan

Available
Coating: Bare, Silver, Nickel, Tin, Gold
Temper: Soft or hard
Single end conductors
Stranded conductors
Bunched conductors
Concentric lay conductors
Single end size ≥ 0.05 mm (AWG 44)
Other diameters or special constructions are available

Specifications
DIN 17471

Properties
✔ Low electrical conductivity
✔ Very low Temperature Coefficient of Resistance
✔ The material is compliant to RoHS and REACh**

Applications
✔ Heating elements
✔ Electrical resistors
✔ Industrial applications as resistance wires
✔ Maximum operating temperature 600 °C
✔ Thermocouples

Nominal values

<table>
<thead>
<tr>
<th></th>
<th>Soft</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resistivity* [Ohm mm²/m]</td>
<td>0.4900</td>
<td>0.4900</td>
</tr>
<tr>
<td>Electrical Conductivity* [% IACS]</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Tensile Strength* [N/mm²]</td>
<td>420</td>
<td>800</td>
</tr>
<tr>
<td>Elongation* [%]</td>
<td>20</td>
<td>1</td>
</tr>
<tr>
<td>Temperature Coefficient of Resistance [1/°C]</td>
<td>0.00004</td>
<td>0.00004</td>
</tr>
<tr>
<td>Density [g/cm³]</td>
<td>8.9</td>
<td>8.9</td>
</tr>
</tbody>
</table>

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Within the tolerances set by RoHS and REACh

E-mail special-conductors@leoni.com
Find the right alloy for your application:
- LEONI Histral® H - High strength alloys
- LEONI Histral® R - Resistance alloys

Find the right specification for your application:
- Single wires made of copper (Cu-ETP1/Cu-OF1)
- Diameter: ranging from Ø 0.05 mm to Ø 1.83 mm
- AWG44 to AWG13

Find the right specification for your application:
- Single wires made of copper (Cu-ETP1/Cu-OF1)
- Diameter: ranging from Ø 0.050 mm to Ø 0.511 mm
- AWG44 to AWG24

Find the right specification for your application:
- Strands made of copper (Cu-ETP1/Cu-OF1)
- Cross-section: ranging from Ø 0.009 mm² to Ø 4.700 mm²
- AWG38 to AWG10

www.leoni-special-conductors.com

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Xinbei District · Changzhou 213022
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E-Mail wire.cn@leoni.com