

# LEONI Histral<sup>®</sup>

High strength alloys



**The Quality Connection**

**LEONI**

# LEONI Histral<sup>®</sup>

## High strength alloys



### Histral<sup>®</sup> 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  $\geq 0.05$  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

Nominal values	Soft	Hard
Resistivity* [Ohm mm <sup>2</sup> /m]	0.1110	0.1330
Electrical Conductivity* [% IACS]	15	13
Tensile Strength* [N/mm <sup>2</sup> ]	380	690
Elongation* [%]	30	1
Temperature Coefficient of Resistance [1/°C]	0.00065	0.00065
Density [g/cm <sup>3</sup> ]	8.8	8.8

\* 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](http://www.leoni-special-conductors.com)

Within the tolerances set by  
**RoHS and REACH**

# LEONI

# LEONI Histral<sup>®</sup>

## High strength alloys



### Histral<sup>®</sup> 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 | ✓ Heating elements               |
| ✓ Industrial applications as resistance wires         | ✓ Leads for heating conductors   |
| ✓ Components for light bulbs and electron tubes       | ✓ Electrical resistors           |
| ✓ Maximum operating temperature 600 °C                | ✓ Corrosion resistant components |

Nominal values	Soft	Hard
Resistivity* [Ohm mm <sup>2</sup> /m]	0.0800	0.0840
Electrical Conductivity* [% IACS]	22	21
Tensile Strength* [N/mm <sup>2</sup> ]	380	760
Elongation* [%]	15	1
Temperature Coefficient of Resistance [1/°C]	0.00600	0.00600
Density [g/cm <sup>3</sup> ]	8.9	8.9

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# LEONI Histral<sup>®</sup>

## High strength alloys



### Histral<sup>®</sup> 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  $\geq 0.05$  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	Soft	Hard
Resistivity* [Ohm mm <sup>2</sup> /m]	0.0500	0.0500
Electrical Conductivity* [% IACS]	35	34
Tensile Strength* [N/mm <sup>2</sup> ]	220	480
Elongation* [%]	18	1
Temperature Coefficient of Resistance [1/°C]	0.00130	0.00130
Density [g/cm <sup>3</sup> ]	8.9	8.9

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# LEONI Histral<sup>®</sup>

## High strength alloys



### Histral<sup>®</sup> 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  $\geq 0.05$  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	Soft	Hard
Resistivity* [Ohm mm <sup>2</sup> /m]	0.1000	0.1000
Electrical Conductivity* [% IACS]	17	17
Tensile Strength* [N/mm <sup>2</sup> ]	250	520
Elongation* [%]	18	1
Temperature Coefficient of Resistance [1/°C]	0.00072	0.00072
Density [g/cm <sup>3</sup> ]	8.9	8.9

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## High strength alloys



### Histral<sup>®</sup> 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  $\geq 0.05$  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	Soft	Hard
Resistivity* [Ohm mm <sup>2</sup> /m]	0.1500	0.1500
Electrical Conductivity* [% IACS]	11	11
Tensile Strength* [N/mm <sup>2</sup> ]	290	560
Elongation* [%]	20	1
Temperature Coefficient of Resistance [1/°C]	0.00040	0.00040
Density [g/cm <sup>3</sup> ]	8.9	8.9

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# LEONI Histral<sup>®</sup>

## High strength alloys



### Histral<sup>®</sup> 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  $\geq 0.05$  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	Soft	Hard
Resistivity* [Ohm mm <sup>2</sup> /m]	0.3000	0.3000
Electrical Conductivity* [% IACS]	6	6
Tensile Strength* [N/mm <sup>2</sup> ]	350	650
Elongation* [%]	20	1
Temperature Coefficient of Resistance [1/°C]	0.00018	0.00018
Density [g/cm <sup>3</sup> ]	8.9	8.9

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## High strength alloys



### Histral<sup>®</sup> 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  $\geq 0.05$  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	Soft	Hard
Resistivity* [Ohm mm <sup>2</sup> /m]	0.4000	0.4000
Electrical Conductivity* [% IACS]	4	4
Tensile Strength* [N/mm <sup>2</sup> ]	400	700
Elongation* [%]	20	1
Temperature Coefficient of Resistance [1/°C]	0.00010	0.00010
Density [g/cm <sup>3</sup> ]	8.9	8.9

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## High strength alloys



### Histral<sup>®</sup> 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  $\geq 0.05$  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	Soft	Hard
Resistivity* [Ohm mm <sup>2</sup> /m]	0.4900	0.4900
Electrical Conductivity* [% IACS]	4	4
Tensile Strength* [N/mm <sup>2</sup> ]	420	800
Elongation* [%]	20	1
Temperature Coefficient of Resistance [1/°C]	0.00004	0.00004
Density [g/cm <sup>3</sup> ]	8.9	8.9

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## Product finder



### LEONI Histral®

Find the right alloy for your application:

- LEONI Histral® H - High strength alloys
- LEONI Histral® R - Resistance alloys



### Single wires

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



### Multi-wires/bundles

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



### Concentric strands

Find the right specification for your application:

- Strands made of copper (Cu-ETP1/Cu-OF1)
- Cross-section: ranging from Ø 0.009 mm<sup>2</sup> to Ø 4.700 mm<sup>2</sup>
- AWG38 to AWG10

## [www.leoni-special-conductors.com](http://www.leoni-special-conductors.com)

### Learn more



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