

Wieland-K30

Cu-OF | Oxygen free copper

Material designation

| | |
|-----|------------------|
| EN | Cu-OF/ CW008A |
| UNS | C10200 |

Chemical composition*

| | |
|-------------------------------|-----------|
| Cu | ≥ 99.95 % |
| Oxygen free not deoxidized | |

*Reference values in % by weight

Physical properties*

| | | |
|---|---------------------|-------|
| Electrical conductivity | MS/m | ≥ 58 |
| | %IACS | 100 |
| Thermal conductivity | W/(m·K) | > 394 |
| Thermal expansion coefficient (0–300 °C) | 10 ⁻⁶ /K | 17.7 |
| Density | g/cm ³ | 8.94 |
| Modulus of elasticity | GPa | 127 |

*Reference values at room temperature

Corrosion resistance

Pure copper and high-copper alloys generally exhibit good corrosion resistance due to their precious character and are practically insensitive to stress corrosion cracking.

Product standards

| | |
|---------|----------------------|
| Rod | EN 13601 EN 12165 |
| Wire | EN 13601 |
| Section | EN 13605 |
| Tube | EN 13600 |

Material properties and typical applications

Wieland-K30 is a very pure, oxygen-free copper with high electrical and thermal conductivity. The material is resistant to heat treatment in reducing atmosphere. (resistant to hydrogen embrittlement according to EN ISO 2626). Therefore, joining operations such as soldering and welding are possible without restriction.

Types of delivery

The BU Extruded Products supplies bars, wire, sections and tubes. Please get in touch with your contact person regarding the available delivery forms, dimensions and tempers.

Fabrication properties

Forming

| | |
|--------------------------------------|-----------|
| Machinability (CuZn39Pb3 = 100 %) | 20 % |
| Capacity for being cold worked | excellent |
| Capacity for being hot worked | fair |

Surface treatment

| | |
|----------------|-----------|
| Polishing | |
| mechanical | good |
| electrolytic | excellent |
| Electroplating | excellent |

Joining

| | |
|-----------------------------------|-----------|
| Resistance welding (butt weld) | fair |
| Inert gas shielded arc welding | excellent |
| Gas welding | good |
| Hard soldering | excellent |
| Soft soldering | excellent |

Heat treatment

| | |
|--------------------------|---------------------|
| Melting range | 1,083 °C |
| Hot working | 750–900 °C |
| Soft annealing | 250–500 °C 1–3 h |
| Thermal stress relieving | 150–200 °C 1–3 h |

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Mechanical properties according to EN

| Rod and wire | | | | | | | | | | | | | | acc. to EN 13601 | | | | | |
|--------------|--|-----|-----------|----|-------|-----|--|------------------------------|------|--------------|------|----------|------|------------------|------|-----|-----|--|--|
| Temper | Diameter/Distance across flats round, square, rectangular | | Thickness | | Width | | Tensile strength R_m | Yield strength $R_{p0.2}$ | | Elongation % | | Hardness | | | | | | | |
| | mm | | mm | | mm | | MPa | MPa | | A100 | A | HB | | HV | | | | | |
| | from | to | from | to | from | to | min. | min. | max. | min. | min. | min. | max. | min. | max. | | | | |
| D | 2 | 160 | 0.5 | 40 | 1 | 200 | cold-drawn without specified mechanical properties | | | | | | | | | | | | |
| H035 | 2 | 160 | 0.5 | 40 | 1 | 200 | – | – | – | – | – | – | – | 35 | 65 | 35 | 65 | | |
| R200 | 2 | 160 | 1 | 40 | 5 | 200 | 200 | – | 120 | 25 | 35 | – | – | – | – | – | – | | |
| H065 | 2 | 80 | 0.5 | 40 | 1 | 200 | – | – | – | – | – | – | – | 65 | 90 | 70 | 95 | | |
| R250 | 2 | 10 | 1 | 10 | 5 | 200 | 250 | 200 | – | 8 | 12 | – | – | – | – | – | – | | |
| R250 | > 10 | 140 | > 10 | 40 | > 10 | 200 | 250 | 180 | – | – | 15 | – | – | – | – | – | – | | |
| R230 | > 30 | 80 | > 10 | 40 | > 10 | 200 | 230 | 160 | – | – | 18 | – | – | – | – | – | – | | |
| H085 | 2 | 40 | 0.5 | 20 | 1 | 120 | – | – | – | – | – | – | – | 85 | 110 | 90 | 115 | | |
| H075 | > 40 | 80 | > 20 | 40 | > 20 | 160 | – | – | – | – | – | – | – | 75 | 100 | 80 | 105 | | |
| R300 | 2 | 20 | 1 | 10 | 5 | 120 | 300 | 260 | – | 5 | 8 | – | – | – | – | – | – | | |
| R280 | > 20 | 60 | > 10 | 20 | > 10 | 160 | 280 | 240 | – | – | 10 | – | – | – | – | – | – | | |
| R260 | > 40 | 60 | > 20 | 40 | > 20 | 160 | 260 | 220 | – | – | 12 | – | – | – | – | – | – | | |
| H100 | 2 | 10 | 0.5 | 5 | 1 | 120 | – | – | – | – | – | – | – | 100 | – | 110 | – | | |
| R350 | 2 | 10 | 1 | 5 | 5 | 120 | 350 | 320 | – | 3 | 5 | – | – | – | – | – | – | | |

| Profiles | | | | | | | | | | | | acc. to EN 13605 | | | |
|----------|-----------|--------------|--|------|---------------------------|------|--------------|------|----------|------|------|------------------|----|--|--|
| Temper | Thickness | Width/Height | Tensile strength R_m | | Yield strength $R_{p0.2}$ | | Elongation % | | Hardness | | | | | | |
| | mm | mm | MPa | | MPa | | A100 | A | HV | | HB | | | | |
| | max. | max. | min. | max. | min. | max. | min. | min. | min. | max. | min. | max. | | | |
| D | 50 | 180 | cold-drawn without specified mechanical properties | | | | | | | | | | | | |
| H035 | 50 | 180 | – | – | – | – | – | – | – | 35 | 65 | 35 | 70 | | |
| R200 | 50 | 180 | 200 | – | 120 | 25 | 35 | – | – | – | – | – | – | | |
| H065 | 10 | 150 | – | – | – | – | – | – | 65 | 95 | 70 | 100 | | | |
| R240 | 10 | 150 | 240 | – | 160 | – | 15 | – | – | – | – | – | | | |
| H080 | 5 | 100 | – | – | – | – | – | – | 80 | 115 | 85 | 120 | | | |
| R280 | 5 | 100 | 280 | – | 240 | – | 8 | – | – | – | – | – | | | |

| Tubes | | | | | | | | | | | | acc. to EN 13600 | | | |
|--------|----------------|----|--|------|---------------------------|------|--------------|------|----------|------|------|------------------|--|--|--|
| Temper | Wall thickness | | Tensile strength R_m | | Yield strength $R_{p0.2}$ | | Elongation % | | Hardness | | | | | | |
| | mm | | MPa | | MPa | | A | HV | | HB | | | | | |
| | from | to | min. | max. | min. | max. | min. | min. | max. | min. | max. | | | | |
| D | – | – | cold-drawn without specified mechanical properties | | | | | | | | | | | | |
| H035 | – | 40 | – | – | – | – | – | – | 35 | 60 | 35 | 65 | | | |
| R200 | – | 40 | 200 | 250 | – | 120 | 35 | – | – | – | – | – | | | |
| H065 | – | 20 | – | – | – | – | – | – | 60 | 90 | 65 | 95 | | | |
| R250 | – | 20 | 250 | 300 | 150 | – | 15 | – | – | – | – | – | | | |
| H090 | – | 10 | – | – | – | – | – | – | 85 | 105 | 90 | 110 | | | |
| R290 | – | 10 | 290 | 360 | 250 | – | 5 | – | – | – | – | – | | | |
| H100 | – | 5 | – | – | – | – | – | – | 95 | – | 100 | – | | | |
| R360 | – | 5 | 360 | – | 320 | – | (3) | – | – | – | – | – | | | |

Wieland-Werke AG | Graf-Arco-Straße 36 | 89079 Ulm | Germany
 info@wieland.com | wieland.com

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