

Wieland-M37/M38

CuZn37 | Brass (lead free)

Material designation

EN CuZn37
CW508L

UNS M37: C27000/
C27200
M38: C27200/
C27400

Chemical composition*

Cu 63 %
Pb < 0.05 %
Zn balance

*Reference values in % by weight

Physical properties*

Electrical conductivity MS/m 15.5
%ACS 26
Thermal conductivity W/(m·K) 121
Thermal expansion coefficient (0–300 °C) 10⁻⁶/K 20.2
Density g/cm³ 8.44
Modulus of elasticity GPa 110

*Reference values at room temperature

Corrosion resistance

Brass with medium copper content is generally quite resistant to organic substances and neutral or alkaline compounds.

Stress corrosion cracking should be taken into account, especially in an ammoniacal atmosphere and whilst under mechanical stress. Dezincification in warm, acidic waters should also be taken into consideration.

Product standards

Rod EN 12163
EN 12165

Wire EN 12166

Section EN 12167

Tube EN 12449

Material properties and typical applications

Wieland-M37/M38, with its low copper content, is a one-phase alloy still having excellent cold working properties. It is, therefore, highly suitable for stamping, riveting, crimping and flanging.

M38 balances the benefits of low material costs and good cold working properties. It is, therefore, the material most frequently used for cold working.

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 30 %
(CuZn39Pb3 = 100 %)

Capacity for being cold worked excellent

Capacity for being hot worked good

Joining

Resistance welding (butt weld) fair

Inert gas shielded arc welding fair

Gas welding fair

Hard soldering excellent

Soft soldering excellent

Surface treatment

Polishing

mechanical electrolytic excellent fair

Electroplating excellent

Heat treatment

Melting range 904–920 °C

Hot working 750–850 °C

Soft annealing 450–650 °C
1–3 h

Thermal stress relieving 200–300 °C
1–3 h

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Mechanical properties according to EN

| Round rods/polygonal rods | | | | | | | | | | | | acc. to EN 12163 | |
|---------------------------|----------|----|--------------------|----|---|----------------------------------|------|--------------|-------|------|----------|------------------|--|
| Temper | Diameter | | Width across flats | | Tensile strength R _m | Yield strength R _{p0.2} | | Elongation % | | | Hardness | | |
| | mm | | mm | | MPa | MPa | | A100 | A11.3 | A | HB | | |
| | from | to | from | to | min. | min. | max. | min. | min. | min. | min. | max. | |
| M | all | | all | | as manufactured – without specified mechanical properties | | | | | | | | |
| R290 | 4 | 80 | 4 | 80 | 290 | – | 230 | – | 40 | 45 | – | – | |
| H070 | 4 | 80 | 4 | 80 | – | – | – | – | – | – | 70 | 110 | |
| R370 | 4 | 40 | 4 | 35 | 370 | 240 | – | – | 12 | 14 | – | – | |
| H105 | 4 | 40 | 4 | 35 | – | – | – | – | – | – | 105 | 145 | |
| R460 | 4 | 8 | 4 | 6 | 460 | 330 | – | – | 6 | 8 | – | – | |
| H140 | 4 | 8 | 4 | 6 | – | – | – | – | – | – | 140 | – | |

| Rectangular rods | | | | | | | | | | | | acc. to EN 12167 | |
|------------------|-----------|----|------|----|---|----------------------------------|------|--------------|-------|------|----------|------------------|--|
| Temper | Thickness | | | | Tensile strength R _m | Yield strength R _{p0.2} | | Elongation % | | | Hardness | | |
| | mm | | | | MPa | MPa | | A100 | A11.3 | A | HB | | |
| | from | to | from | to | min. | min. | max. | min. | min. | min. | min. | max. | |
| M | all | | | | as manufactured – without specified mechanical properties | | | | | | | | |
| R290 | 3 | 20 | | | 290 | – | 230 | 30 | 40 | 45 | – | – | |
| H050 | 3 | 20 | | | – | – | – | – | – | – | 50 | 100 | |
| R370 | 3 | 10 | | | 370 | 240 | – | 10 | 12 | 14 | – | – | |
| H085 | 3 | 10 | | | – | – | – | – | – | – | 85 | 130 | |
| R460 | 3 | 4 | | | 460 | 330 | – | 4 | 6 | – | – | – | |
| H105 | 3 | 4 | | | – | – | – | – | – | – | 105 | 145 | |

| Tubes | | | | | | | | | | | | acc. to EN 12449 | |
|--------|----------------|------|------|------|---|----------------------------------|------|--------------|------|------|----------|------------------|--|
| Temper | Wall thickness | | | | Tensile strength R _m | Yield strength R _{p0.2} | | Elongation % | | | Hardness | | |
| | mm | | | | MPa | MPa | | A100 | | | HV | HB | |
| | max. | min. | max. | min. | min. | max. | min. | min. | max. | min. | max. | | |
| M | 20 | | | | as manufactured – without specified mechanical properties | | | | | | | | |
| R300 | 20 | – | – | – | – | 220 | – | 45 | – | – | – | – | |
| H060 | 20 | – | – | – | – | – | – | – | 60 | 90 | 55 | 85 | |
| R370 | 10 | – | – | – | 370 | 200 | – | 25 | – | – | – | – | |
| H085 | 10 | – | – | – | – | – | – | – | 85 | 120 | 80 | 115 | |
| R440 | 5 | – | – | – | 440 | 320 | – | 10 | – | – | – | – | |
| H115 | 5 | – | – | – | – | – | – | – | 115 | – | 110 | – | |

| Round wires | | | | | | | | | | | | acc. to EN 12166 | |
|-------------|----------|----|------|----|---|----------------------------------|------|--------------|-------|------|----------|------------------|--|
| Temper | Diameter | | | | Tensile strength R _m | Yield strength R _{p0.2} | | Elongation % | | | Hardness | | |
| | mm | | | | MPa | MPa | | A100 | A11.3 | A | HB | | |
| | from | to | from | to | min. | min. | max. | min. | min. | min. | min. | max. | |
| M | all | | | | as manufactured – without specified mechanical properties | | | | | | | | |
| R290 | 0.5 | 20 | | | 290 | – | 230 | 30 | 40 | 45 | – | – | |
| H055 | 1.5 | 20 | | | – | – | – | – | – | – | 55 | 110 | |
| R370 | 0.5 | 20 | | | 370 | 240 | – | 10 | 12 | 14 | – | – | |
| H095 | 1.5 | 20 | | | – | – | – | – | – | – | 95 | 140 | |
| R460 | 0.5 | 5 | | | 460 | 330 | – | 4 | 6 | – | – | – | |
| H115 | 1.5 | 5 | | | – | – | – | – | – | – | 115 | 155 | |
| R550 | 0.5 | 4 | | | 550 | 450 | – | 2 | 5 | – | – | – | |
| H130 | 1.5 | 4 | | | – | – | – | – | – | – | 130 | 170 | |
| R700 | 0.5 | 4 | | | 700 | 550 | – | – | – | – | – | – | |
| H160 | 1.5 | 4 | | | – | – | – | – | – | – | 160 | – | |

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