

Wieland-M57
CuZn42
Low leaded brass

**Extruded and
drawn products**



| Material designation | |
|----------------------|----------------|
| EN | CuZn42/CW510L |
| UNS | no EN standard |

| Chemical composition* | |
|-----------------------|---------|
| Cu | 58 % |
| Zn | balance |
| Pb | 0.2 % |

* Reference values in % by weight

| Physical properties* | | |
|--|---------------------|----------|
| Electrical conductivity | MS/m %IACS | 18 31 |
| Thermal conductivity | W/(m·K) | 139 |
| Thermal expansion coefficient (0–300 °C) | 10 ⁻⁶ /K | 21.7 |
| Density | g/cm ³ | 8.41 |
| Modulus of elasticity | GPa | 107 |

* Reference values at room temperature

Corrosion resistance

Machining brass is generally quite resistant against organic substances as well as 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 12164 EN 12165 |
| Wire | EN 12166 |

Material properties and typical applications

Wieland-M57 is a low leaded material which is however quite suitable for machining due to its structural constitution. M57 can be therefore used as a cost-effective replacement for conventional lead-containing machining brass provided that it must not meet high requirements as regards mechanical properties and corrosion resistance.

Material accepted for products in contact with drinking water as per 4 MS positive list.

Types of delivery

The Extruded and Drawn Products Division 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 | | Surface treatment | |
|-----------------------------------|-----------|-------------------|-----------|
| Machinability (CuZn39Pb3 = 100 %) | 70 % | Polishing | |
| Capacity for being cold worked | poor | mechanical | good |
| Capacity for being hot worked | excellent | electrolytic | poor |
| | | Electroplating | excellent |

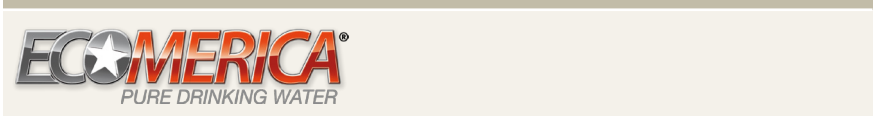
Joining

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

Heat treatment

| | |
|--------------------------|---------------------|
| Melting range | 870–900 °C |
| Hot working | 650–750 °C |
| Soft annealing | 450–550 °C 1–3 h |
| Thermal stress relieving | 250–350 °C 1–3 h |

Trademarks



Further information is provided in the brochures on Ecomerica and on drinking water.

Wieland-M57

CuZn42

Low leaded brass

Mechanical properties according to EN

Round rods/polygonal rods acc. to EN 12164

| Temper | Diameter | | Width across flats | | Tensile strength | Yield strength | | Elongation | | | Hardness | |
|--------|----------|-------|--------------------|-------|---|--|-----|------------|------------|--------|----------|-----|
| | mm from | mm to | mm from | mm to | R _m MPa min. | R _{p0.2} MPa min. MPa max. | | A100 % | A11.3 % | A % | HB | |
| M | all | | all | | as manufactured – without specified mechanical properties | | | | | | | |
| R360 | 6 | 80 | 5 | 60 | 360 | – | 320 | – | 15 | 20 | – | – |
| H090 | 6 | 80 | 5 | 60 | – | – | – | – | – | – | 90 | 125 |
| R430 | 2 | 40 | 2 | 35 | 430 | 220 | – | 6 | 8 | 10 | – | – |
| H110 | 2 | 40 | 2 | 35 | – | – | – | – | – | – | 110 | 160 |
| R500 | 2 | 14 | 2 | 10 | 500 | 350 | – | – | 3 | 5 | – | – |
| H135 | 2 | 14 | 2 | 10 | – | – | – | – | – | – | 135 | – |

Round wires acc. to EN 12166

| Temper | Diameter | | Tensile strength | Yield strength | | Elongation | | | Hardness | | |
|--------|----------|-------|---|--|-----|------------|------------|--------|----------|-----|--|
| | mm from | mm to | R _m MPa min. | R _{p0.2} MPa min. MPa max. | | A100 % | A11.3 % | A % | HB | | |
| M | all | | as manufactured – without specified mechanical properties | | | | | | | | |
| R360 | 6 | 20 | 360 | – | 320 | – | 15 | 20 | – | – | |
| H095 | 6 | 20 | – | – | – | – | – | – | 95 | 130 | |
| R430 | 0.5 | 14 | 430 | 220 | – | 6 | 8 | 10 | – | – | |
| H115 | 1.5 | 14 | – | – | – | – | – | – | 115 | 170 | |
| R500 | 0.5 | 8 | 500 | 350 | – | 2 | 5 | – | – | – | |
| H145 | 1.5 | 8 | – | – | – | – | – | – | 145 | – | |