

## Wieland-S31 Special brass

## Extruded/drawn products

**Wieland-S31** is a special brass exhibiting high resistance to load and wear, due to embedded hard silicides, as well as good high-temperature strength.

Wieland-S31 is primarily used in high-load sliding applications (e.g. bearing bushings, sleeves and other sliding elements).

### Chemical composition\*

Cu	68%
Si	1%
Pb	0.2%
Zn	balance

\* Reference values in % by weight

### Material designation

EN	CuZn31Si1 CW708R
UNS	not standardized
DIN*	CuZn31Si-2.0490
BS*	not standardized
NF*	not standardized

\* Former national standards

### Physical properties\*

Electrical conductivity	MS/m	8.9
	% IACS	15
Thermal conductivity	W/(m*K)	71
Thermal expansion coefficient (0-300°C)	10 <sup>-6</sup> /K	19.2
Density	g/cm <sup>3</sup>	8.41
Modulus of elasticity	GPa	108

\* Reference values at room temperature

1 GPa = 1 kN/mm<sup>2</sup>

1 MS/m = 1 m/Ω • mm<sup>2</sup>

### Fabrication properties

#### Forming

Machinability (CuZn39Pb3 = 100 %)	40%
Capacity for being cold worked	good
Capacity for being hot worked	fair

#### Joining

Resistance welding	good
Inert gas shielded arc welding	good
Hard soldering	fair
Soft soldering	fair

### Corrosion resistance

Special brass generally has excellent corrosion resistance due to alloying additions. Wieland-S31 particularly exhibits excellent resistance to oil. Through the addition of silicon tarnishing resistance is increased and susceptibility to stress corrosion cracking reduced.

### Surface treatment

Polishing	mechanical	excellent
	electrolytic	poor
Electroplating		fair

### Product standards

Tube	EN 12449
Rod	EN 12163

### Heat treatment

Melting range	880-915 °C
Hot working	750-850 °C
Soft annealing	500-600 °C, 1-3 h
Thermal stress-relieving	250-350 °C, 1-3 h

### Mechanical properties (values can be achieved and are a function of size and form)

Reference values	from (soft/extruded)	to (hard)
R <sub>m</sub> [MPa]	440	500
R <sub>p0.2</sub> [MPa]	160	400
A <sub>11,3</sub> [%]	60	20
HB	90	140

## Forms and sizes available

Material										
Wieland	EN designation		Outside diameter		Wall thickness		Circumscribing diameter		Diameter / width across flats	
	Brief designation	Number	from	to	from	to	from*	to	from	to
S31	CuZn31Si1	CW708R	10	130	1	10				
Round tubes			10	130	1	10				
Drawn sections							3.5	100		
Extruded sections								130		
Sectional tubes										
Round and polygonal rods									2	100
Round wires									2	
Polygonal wires									2	

All values in mm

\* Depending on the form, cross-sections in the lower size range are also available as wire.

**Wieland - S31**

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