

| Material Designation |             |
|----------------------|-------------|
| EN                   | CuZn23Al3Co |
| UNS*                 | C68800      |

\* Unified Numbering System (USA)

| Chemical Composition (Reference) |         |
|----------------------------------|---------|
| Cu                               | 74 %    |
| Al                               | 3.5 %   |
| Co                               | 0.4 %   |
| Zn                               | balance |

| Typical Applications                     |
|--|
| • Components for the electrical industry |
| • Contact springs                        |
| • Insulation displacement connectors     |

| Physical Properties*                   |                     |          |
|--|---------------------|----------|
| Electrical Conductivity                | MS/m<br>%IACS       | 10<br>17 |
| Thermal Conductivity                   | W/(m·K)             | 78       |
| Coefficient of Electrical Resistance** | 10 <sup>-3</sup> /K | 1.2      |
| Coefficient of Thermal Expansion**     | 10 <sup>-6</sup> /K | 18.2     |
| Density                                | g/cm <sup>3</sup>   | 8.23     |
| Modulus of Elasticity                  | GPa                 | 116      |
| Specific Heat                          | J/(g·K)             | 0.375    |
| Poisson's Ratio                        |                     | 0.34     |

\* Reference values at room temperature

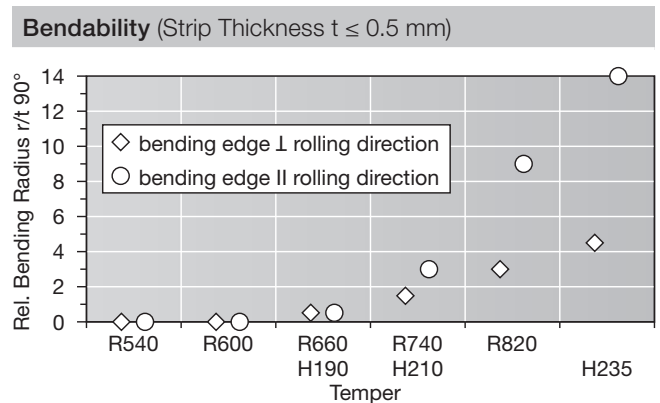
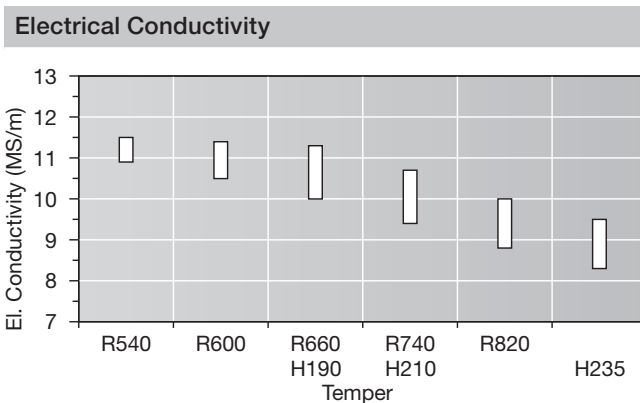
\*\* Between 0 and 300 °C

| Fabrication Properties            |               |
|-----------------------------------|---------------|
| Capacity for Being Cold Worked    | excellent     |
| Machinability                     | fair          |
| Capacity for Being Electroplated  | excellent     |
| Capacity for Being Hot-Dip Tinned | less suitable |
| Soft Soldering                    | less suitable |
| Resistance Welding                | good          |
| Gas Shielded Arc Welding          | fair          |
| Laser Welding                     | less suitable |

| Corrosion Resistance   |
|--|
| Good general corrosion resistance, also in seawater. Much lower sensitivity to stress corrosion cracking than CuZn37. Due to the aluminium content, S23 has a much better tarnish resistance than e. g. brass or bronze. |

| Mechanical Properties            |     |         |         |         |         |       |
|----------------------------------|-----|---------|---------|---------|---------|-------|
| Temper                           |     | R540    | R600    | R660    | R740    | R820  |
| Tensile Strength R <sub>m</sub>  | MPa | 540–600 | 600–700 | 660–750 | 740–830 | ≥ 820 |
| Yield Strength R <sub>p0.2</sub> | MPa | ≤ 430   | ≥ 510   | ≥ 580   | ≥ 660   | ≥ 780 |
| Elongation A <sub>50mm</sub>     | %   | ≥ 30    | ≥ 13    | ≥ 10    | ≥ 3     | ≥ 2   |

| Temper      | H190    | H210    | H235  |
|-------------|---------|---------|-------|
| Hardness HV | 190–220 | 210–240 | ≥ 235 |

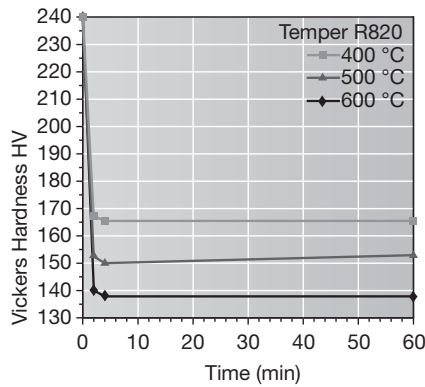
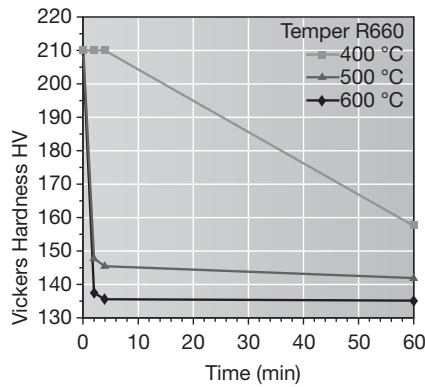


# Wieland-S23

CuZn23Al3Co

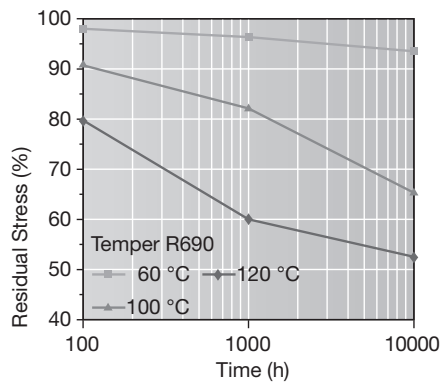
C68800

## Resistance to Softening



Vickers hardness after heat treatment (typical values)

## Stress Relaxation



Stress remaining as a function of service temperature and time. Measured on stress relief annealed specimens parallel to rolling direction. Values extrapolated according to F. R. Larson, J. Miller, Trans ASME74 (1952) 765-775. Total stress relaxation depends on the applied stress level.

## Fatigue Strength

The fatigue strength is defined as the maximum bending stress amplitude which a material withstands for  $10^7$  load cycles under symmetrical alternate load without breaking. It is dependent on the temper tested and is about  $\frac{1}{3}$  of the tensile strength  $R_m$ .

## Types and Formats Available

- Standard coils with outside diameters up to 1400 mm
- Traverse-wound coils with drum weights up to 1.5 t
- Multicoil up to 5 t
- Contour-milled strip
- Sheet
- Strip and sheet with protective coating

## Dimensions Available

- Strip thickness from 0.10 mm, thinner gauges on request
- Strip width from 3 mm, however min. 10 x strip thickness

Wieland-Werke AG

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Rolled Products Division

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