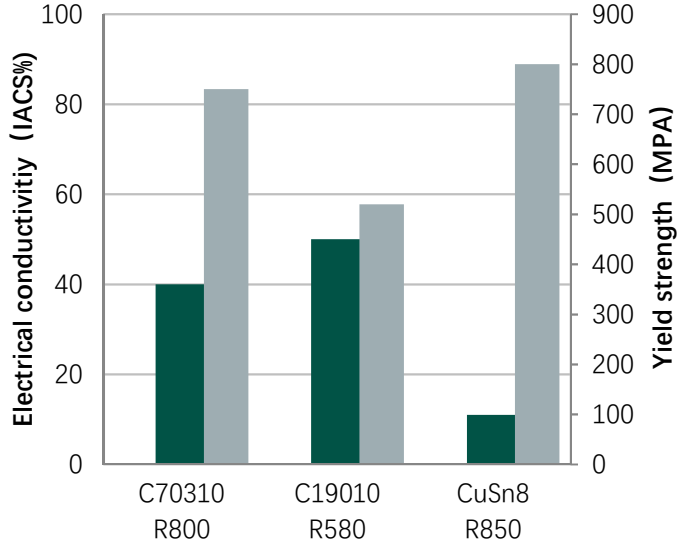


## 4.11 C70310

| Application Range  |              |  |   |                                |                                     |                              |  |                                 |   |                                 |  |  |
|--|--------------|--|---|--------------------------------|-------------------------------------|------------------------------|--|---------------------------------|---|---------------------------------|--|--|
| Hardenable, higher alloyed Cu-Ni-Si alloys for high strength requirements up to 800 MPa in combination with good electrical conductivity, bendability and for the Cu-Ni-Si alloys typical good relaxation resistance. Partly suitable as substitution for beryllium alloys. Good resistance against stress corrosion cracking. |              |  |   |                                |                                     |                              |  |                                 |   |                                 |  |  |
| Physical Properties  |              |  |   |                                |                                     |                              | Chemical Position (reference value) %      |                                 |   |                                 |  |  |
| Density *  |              | g/cm <sup>3</sup>                              |   | 8.85                           |                                     | Cu                           |  | Rest                            |   |                                 |  |  |
| Thermal conductivity *   |              | W/(m·k)  |   | 185                            |                                     | Ni                           |  | 1.0 - 4.0                       |   |                                 |  |  |
| Electr. conductivity ***   |              | MS/m   |   | 25/23                          |                                     | Si                           |  | 0.08 - 1.00                     |   |                                 |  |  |
| Electr. conductivity ***   |              | IACS (%)                                       |   | 43/40                          |                                     | Sn                           |  | max. 1.00                       |   |                                 |  |  |
| Thermal expansion c. **  |              | 10 <sup>-6</sup> K                             |   | 17                             |                                     | Zn                           |  | max. 2.00                       |   |                                 |  |  |
| Modulus of elasticity *  |              | Gpa  |   | 132                            |                                     | Other                        |  | max. 0.5                        |   |                                 |  |  |
| Condition  | Temper class | Tensile strength<br>T.S.<br>min. - max.<br>MPa | Yield strength<br>Rp 0.2<br>min.<br>MPa | Elongation<br>A50<br>min.<br>% | Hardness<br>(reference value)<br>HV | Electr. conductivity<br>MS/m | Bendability<br>R/t <sup>1) 2)</sup><br>90° |                                 | Bendability<br>R/t <sup>1) 2)</sup><br>180° |                                 | Comparison of yield strength and electrical conductivity (IACS%) of selected alloys<br>■ IACS(%) ■ Yield strength(Mpa) |  |
|  |              |  |   |                                |                                     |                              | GW<br>Strip thickness<br>≤0.5mm            | BW<br>Strip thickness<br>≤0.5mm | GW<br>Strip thickness<br>≤0.5mm             | BW<br>Strip thickness<br>≤0.5mm |  |  |
| Cold rolled  | R360         | 360 - 430                                      | 250                                     | 14                             | 16 <sup>3)</sup>                    | 100 - 130                    | 25   | 0                               | 0   | 0                               | 0.5  |  |
|  | R410         | 410 - 470                                      | 360                                     | 9                              | 12 <sup>3)</sup>                    | 125 - 155                    | 25   | 0                               | 0.5   | 0.5                             | 1  |  |
|  | R460         | 460 - 520                                      | 410                                     | 7                              | 10 <sup>3)</sup>                    | 135 - 165                    | 25   | 0.5                             | 1   | 1.5                             | 3  |  |
|  | R520         | 520 - 580                                      | 460                                     | 5                              | 8 <sup>3)</sup>                     | 145 - 175                    | 25   | 1                               | 2   | 2.5                             | 3.5  |  |
|  | R580         | 580 - 650                                      | 520                                     | 4                              | 6 <sup>3)</sup>                     | 170 - 200                    | 25   | 1                               | 2.5   | 3                               | 5  |  |
| Precipitation hardened   | R620         | 620 - 720                                      | 540                                     | 16                             |                                     | 180 - 240                    | 23   | 0                               | 0   | 1                               | 1.5  |  |
|  | R660         | 660 - 750                                      | 590                                     | 10                             |                                     | 200 - 250                    | 23   | 1                               | 1   | 1.5                             | 2  |  |
|  | R750         | 750 - 830                                      | 680                                     | 8                              |                                     | 210 - 260                    | 22   | 2                               | 2   | 3                               | 4  |  |
|  | R800         | >800   | 750                                     | 5                              |                                     | > 210                        | 22   | 2                               | 3   | 4                               | 5  |  |

\*Reference values at room temperature

\*\*Between 20 and 300 °C

\*\*\* Values for the lowest temper class

1)  $r = x \cdot t$  (strips up to  $t = 0.50$  mm)

2) Sample width = 10 mm / bending at smaller bending widths on request (Evaluation according to page 5.4.2. of Hand-Out)

3) Valid only as thermal stress relieved qualities

Disclaimer: Due to possible changes and variations in the production process, the information published in the hand-out / brochure / datasheet cannot be guaranteed. The right to changes and modifications in the composition of the products is hereby explicitly reserved, so no warranty claim shall be derived from the information provided.

### 4.9 High Performance Alloy