

## 5.4. NB17 - CuNi18Zn27

| Alloy Designation |            |
|-------------------|------------|
| EN                | CuNi18Zn27 |
| DIN-EN            | CW410J     |
| UNS               | C77000     |
| JIS               | C7701      |

| Chemical Composition |         |   |
|----------------------|---------|---|
| Weight percentage    |         |   |
| Cu                   | Balance | % |
| Ni                   | 18      | % |
| Zn                   | 27      | % |
| Fe                   | < 0,2   | % |
| Mn                   | < 0,5   | % |
| Pb                   | < 0,01  | % |

| Characteristics   |
|---|
| NB17 is a nickel silver alloy containing 18 % nickel and 27 % zinc. The alloy has good cold-forming properties, is tarnish resistant and has particularly good spring properties. Like all copper alloys the copper-nickel-zinc alloys are not susceptible to embrittlement at lower temperature. The corrosion resistance of nickel silver is considerably better than that of binary copper-zinc alloys. NB17 is insensitive to stress corrosion cracking.<br>NB17 is used for contact springs in relays, EMI shieldings and jewelry. |

| Main Applications   |
|---|
| Coins, Caps for quartz crystals, Electromagnetic shieldings, Deep drawing parts, Tableware, Security keys, Cutlery, Contact springs, Connector, Leaf springs for relays, Electric contacts. |

| Mechanical Properties |                        |                                    |                                 |                 |                         |     |
|-----------------------|------------------------|------------------------------------|---------------------------------|-----------------|-------------------------|-----|
| Temper                | Tensile Strength<br>Rm | Yield Strength<br>Minimum<br>Rp0,2 | Elongation<br>Minimum<br>A50 mm | Hardness<br>HV* | Bendability<br>90°      |     |
|                       |                        |                                    |                                 |                 | gw                      | bw  |
|                       | MPa                    | MPa                                | %                               | HV              | rel. Bending radius R/T |     |
| <b>R390</b>           | 390 .. 470             | 280                                | 33                              | 90 .. 120       | 0                       | 0   |
| <b>R470</b>           | 470 .. 540             | 280                                | 11                              | 135 .. 180      | 0                       | 0   |
| <b>R540</b>           | 540 .. 630             | 450                                | 5                               | 170 .. 200      | 0                       | 0   |
| <b>R600</b>           | 600 .. 700             | 550                                | 2                               | 190 .. 220      | 0                       | 0,5 |
| <b>R700</b>           | 700 .. 800             | 650                                | 1                               | 220 .. 250      | -                       | -   |
| <b>R760</b>           | 760 .. 850             | 700                                | -                               | 230 .. 260      | -                       | -   |

| Physical Properties                          |              |     |                   |
|--|--------------|-----|-------------------|
| Typical values in annealed temper at 20°C    |              |     |                   |
| Density                                      |              | 8,8 | g/cm <sup>3</sup> |
| Thermal expansion coefficient                | 20 .. 300°C  | 17  | 10-6/K            |
| Thermal conductivity                         |              | 27  | W/(m*K)           |
| Electrical conductivity                      | MS/m         | 3   | MS/m              |
| Electrical conductivity                      | IACS         | 5   | %                 |
| Thermal coefficient of electrical resistance | (0 .. 100°C) | 0,3 | 10-3/K            |
| Modulus of elasticity                        | GPa          | 135 | GPa               |

| Fabrication Properties    |              |
|---------------------------|--------------|
| Cold Forming Properties   | Excellent    |
| Mechinability             | Satisfactory |
| Electroplating Properties | Excellent    |
| Hot Tinning Properties    | Satisfactory |
| Soft Soldering Properties | Satisfactory |
| Resistance Welding        | Excellent    |
| Gas Shielded Arc Welding  | Good         |
| Laser Welding             | Good         |

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