

## Materials information

Two material-groups are used for the connectors described in the catalogue:

- Metals for contacts and housings
- Plastics for insulators and housings

## Materials for contacts

Properties of contacts are largely determined by the materials used. Some of the decisive features are:

- Strength or elastic qualities
- Electrical conductivity
- Max. operating temperature

Considering these points, reliable copper alloys for the manufacturing of contacts are used (CuZn) at ESCHA. CuZn combines good strength with good conductivity and temperature resistance.

## Materials for metal housings

Depending on application, brass, die-cast Zinc or stainless steel are used for the metal housings. Due to its good workability and strength, brass is mainly used for round housing parts.

## Plastics for insulators

Thermoplastic polyurethane is mainly used for insulators and contact carriers of ESCHA-connectors.

## Surface treatment

In order to protect the contacts and housing against aggressive environmental conditions and improve the conductivity, they are provided with adequate surfaces. ESCHA-contacts are gold-plated or silver-plated. These surfaces improve the conductivity and are corrosion-resistant. In case of applications in mA-range with lowest voltages, the use of gold-plated contacts to improve the electrical properties is recommended which also contributes to further improvement of corrosionresistance. For reasons of corrosion and optics, housings are nickel-plated, chrome-plated, Teflon-treated, or made of stainless steel.

## Materials for sealing

Sealing-rings made of elastic materials are used with all ESCHA-round connectors to achieve the required degree of protection. Depending on application, nitril-butardien-rubber (NBR) or flour-rubber (FKM/FPM) have been selected for this purpose.

## Plastics for housings

Glass fibre-reinforced PA (polyamide) is mainly used for plastic housings. This well-proven plastic is very cohesive, abrasion-proof, resistant to solvents, oils and lubricants and can be used at up to a permanent temperature of 100°C–120°C.

Further features of this material are:

- High mechanical strength
- High stiffness
- High thermal resistance
- Good electrical insulating-property
- Good resistance against several chemicals

## Characteristic data of the metals used

### Surfaces

Material	Symbol	Conductivity [m/Ω×mm <sup>2</sup> ]	Tensile strength [N/mm <sup>2</sup> ]	Limit temperature [°C]	Corrosion-resistant
gold	Au	44	–	–	very good
silver	Ag	62	–	–	good
nickel	Ni	10	–	–	very good

### Basematerial

Material	Symbol	Conductivity [m/Ω×mm <sup>2</sup> ]	Tensile strength [N/mm <sup>2</sup> ]	Limit temperature [°C]	Corrosion-resistant
copper	Cu	55	approx. 400	90	conditionally resistant, surface recommended
brass	CuZn	15	approx. 500	90	conditionally resistant, surface recommended
tinbronze	CuSn	9	approx. 700	120	good
zinc diecasting	GD-Zn	16	approx. 300	–	not resistant, surface required