

## Copper-zinc casting alloy **STBXA** alloy 2040

**STBXA** is an iron-free special brass similar to CuZn39Al1Mn-C with medium strength, low permeability and a defined electrical conductivity of 12.5 – 16.0 MS/m = 21.0 – 27.5 IACS. Normal special brass has a lower conductance of about 4 – 10 MS/m. The material is also easy to forge.

ZOLLERN brand	STBXA
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### // Nominal composition (mass fraction in %)

Cu	Al	Si	Mn	Zn	Other
60	1	0.3	0.5	Rest	max. 1.0

### // Strength properties at room temperature

	(minimum values)			
	$R_m$ N/mm <sup>2</sup>	$R_{p0.2}$ N/mm <sup>2</sup>	$A_5$ %	HB
Sand casting	450	260	5	130
Centrifugal casting	480	260	5	130

### // Physical properties (reference values)

Density at 20°C	8.2 kg/dm <sup>3</sup>
Melting temperature/range	880 – 900°C
Specific heat capacity at 20°C	0.419 J/g × °C
Thermal conductivity at 20°C	0.55 W/cm °C
Electrical conductivity at 20°C	> 12.5 MS/m > 21.5 % IACS
Electrical resistance at 20°C	< 0.08 Ω mm <sup>2</sup> /m
Coefficient of linear expansion in the range from 20°C to 200°C	19 × 10 <sup>-6</sup> °C <sup>-1</sup>
Shrinkage	approx. 1.5 - 2.3 %
Young's modulus	98 KN/mm <sup>2</sup>
Permeability	< 1.05

### // Dynamic strength values at room temperature (reference values)

Bending fatigue strength $R_{bw}$ at 10 <sup>8</sup> load cycles	150 N/mm <sup>2</sup>
Notched impact energy (ISO - V/KV)	40 joules

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### Areas of application

**STBXA** is mainly used for parts subjected to high static loads with a defined electrical conductivity. For example

- Pressure plates for generators
- Contact parts in electroplating plants
- General: Brass castings with comparatively good electrical conductivity and medium strength

### Machinability

All machining operations are easily possible. The machinability index is approx. 40 (CuZn39Pb3 = 100). Mechanical polishing is easily possible, electrochemical less so.

**Relaxation annealing** approx. 350 – 480 °C

**Soft soldering** less suitable

**Brazing** less suitable

**Welding** Inert gas-shielded arc welding is possible. However, smoke is generated due to the evaporation of zinc (smoke extraction). Filler metal e.g. CuZn40Sn1MnNiSi = CF731R or S-CuAl8Ni2, which reduces smoke development

**Galvanisability** average

