ZOLLERN

Solid metals. Fine solutions.

Copper-aluminium casting and wrought alloy
TZB 28 alloy 1780 / **TZB 32** alloy 1790 / **TZB 36** alloy 1800

TZB a hard, brittle Cu-Al alloy, specially developed for chipless forming of austenitic steels. Because of the low elongation values, it is not a construction material. The brittle material must not be stressed in tension or bending, but only in compression.

ZOLLERN brand	TZB 28, TZB 32, TZB 36
DIN EN- designation	- not standardised -

// **Composition** (weight by per cent in %)

	Cu	Al	Fe	Co
TZB 28	Rest	approx. 13	approx. 5	approx. 2
TZB 32	Rest	approx. 14	approx. 5	approx. 2.5
TZB 36	Rest	approx. 14.5	approx. 5	approx. 3

// **Hardness ranges** at room temperature

Valid for castings and forgings regardless of wall thickness.
Only the hardness is decisive for the acceptance. Values from the tensile test for information only.

Material	**Yield strength $R_{p0.2}$ N/mm²**	**Tensile strength R_m N/mm²**	**Elongation A_5 %**	**Hardness HB 10/3000**
TZB 28	approx. 350 - 500	approx. 500 - 800	approx. 0 - 4	260 - 300
TZB 32	approx. 400 - 600	approx. 600 - 900	approx. 0 - 2	300 - 340
TZB 36	Very brittle, no tensile test possible			340 - 380

// **Physical properties**

Density at 20 °C	7.00 - 7.20 kg/dm³
Melting temperature/range	approx. 1070 °C
Coefficient of linear expansion from 20° to 200°C	16 x 10^{-6} $°C^{-1}$
Electr. conductivity at 20°C	3 - 5 MS/m approx. 5 - 9 % IACS
Electr. resistance at 20°C	0.2 - 0.3 Ω mm²/m
Permeability	< 1.03

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Areas of application
The material **TZB** is available in 3 hardness levels, cast or forged. This means the material is adapted to various requirements, such as

- the longest service life »TZB 36« or
- improved machinability »TZB 28«

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Good sliding properties and low friction value compared to austenitic steels result in a good surface finish when used as deep-drawing tools, and increase the possible degree of deformation per draw.

They are made of TZB:

- Dies, hold-down devices and punches for the production of deep-drawn parts for cookware, sinks.
- Drum parts and housing parts of washing machines, tumble dryers and dishwashers.
- Profiling rollers and forming tools for the production of longitudinally welded pipes, pipe bends and fittings.
- Guide rollers and oil scrapers in cold rolling mills.
- Grinding rulers and guide rails on centreless grinding and straightening or polishing machines.

Machinability
Hard metals of hardness level K 10 or K 20 should be used for turning and milling. The machining machine should work as free of play as possible and the workpiece as well as the tool should be rigidly clamped. Use a sulphur-free cooling lubricant for cooling. To prevent the edges from breaking out, always work towards the workpiece, not over the edge to the outside. For example, it can make sense to apply the feed from both sides when turning or milling. When drilling, chipping of the edges when drilling through is prevented by a firm support and reduction of the feed rate.

Soft soldering	Not suitable
Brazing	Not suitable
Welding	not recommended, cracking with rapid heat input or cooling. Preheating to approx. 700°C and furnace cooling necessary
Surface treatment	grinding and polishing is easily possible

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