

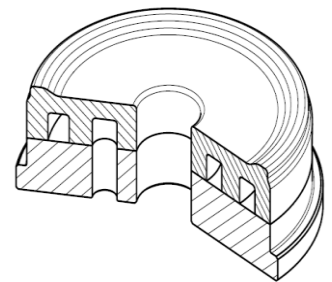
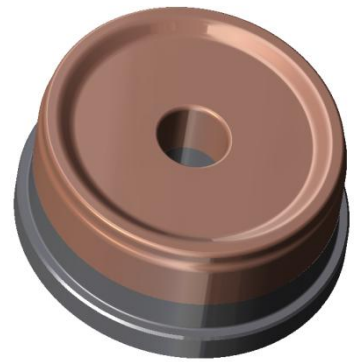
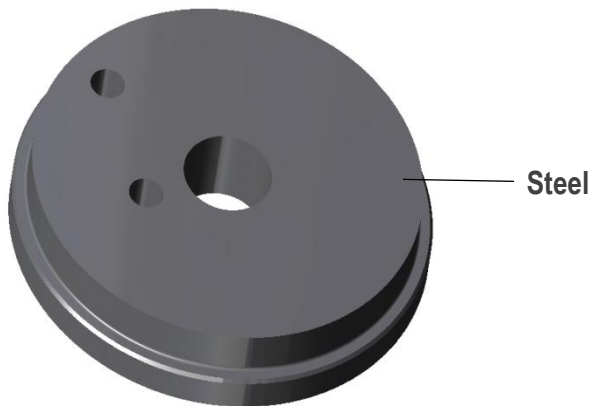
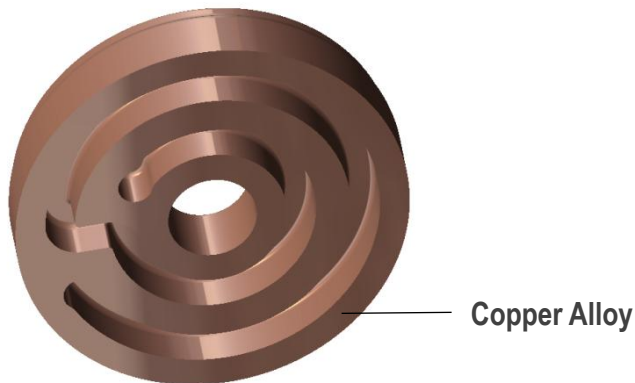
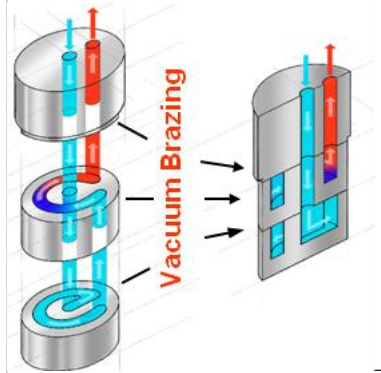
Hardenable Copper Alloys for Tooling Industry

From prototype to serial production

Vacuum brazing technology for customized material combinations

Heat Treatment
Sintering (MIM)
Brazing
Thermal Spraying
Electron Beam Welding

Engineering



Sophisticated temperature management by use of hardenable copper alloys

Competence:

Listemann AG is a leading service-contractor in Europe in the field of joining technology, especially vacuum brazing.. By means of a newly developed heat treatment process tool components can be joined consisting of high-strength copper alloys **and** a tool steel.

Customer benefit:

Application oriented use of materials where it has to be used. High-strength, hardenable copper alloys with maximum thermal conductivity are combined with wear resistant tool steels. Leak tight components with a heat resistant metallurgical joint realized by vacuum brazing.

Material combinations and Rockwell hardnesses (after joining process):

- K220 with 1.2714; 180-200 HB / 46-51 HRC
- K220 with 1.2767; 180-200 HB / ca. 45 HRC
- K350 with 1.2714; 280-300 HB / 51-53 HRC
- K350 with 1.2767; 280-300 HB / 49-52 HRC

Services:

- Brazing specific support during design phase
- vacuum brazing and hardening of the tool inserts
- consultation and training on site

Hardened, high-strength, high-thermal conductive copper alloys can be combined with tool steels by vacuum brazing, with a minimum loss in hardness of the copper alloy.



Comparison pure copper with Hovadur®	Mechanical properties at 20°C			Physical properties at 20°C	
	Brinell hardness [HB]		Tensile Strength [MPa]	Thermal conductivity [W/m·K]	CTE [10 ⁻⁶ /K]
	as delivered	after brazing	as delivered		
Copper (ECu58)	45-70	weich	200-250	350-370	16,5
Hovadur® K220	220	180-200	650-800	190-240	16,2
Hovadur® K350	340	280-300	1.150-1.350	160	17,0