

## Catalog

TON™ Al-Bronze Series										
Alloys	Chemical Composition %						Properties			
	Aluminum Al	Iron Fe	Nickel Ni	Manganese Mn	Cobalt Co		Hardness HB	Elongation %	Thermal Conductivity W/m-K	Density g/cm <sup>3</sup>
TON 20	10.8	3.5	--	--	--		190	12	58	7.45
TON 30	13.3	4.3	--	≤2.0	≤2.0		280	1	46	7.20
TON 35	14.5	4.0	--	≤2.0	≤2.0		340	0.5	40	7.06
TON 40	15.0	5.3	--	≤2.0	≤2.0		370	0.2	34	6.93
TON Q2	10.0	3.0	4.8	≤1.5	--		220	15	39	7.58
TON Q3	10.5	4.8	5.1	≤1.5	--		275	6	40	7.45

**Notes:** Cu + Sum of Named Elements, 99.5% min.  
Typical values measured at room temperature, 20°C(68°F).

### Material Properties

High Hardness, High Strength, Galling Resistance, Anti-Friction, Excellent Wear Resistance, Excellent Corrosion Resistance, Good Oxidation Resistance, Good Thermal Conductivity

### Typical Applications

Categories	Products	Alloys					
		TON 20	TON 30	TON 35	TON 40	TON Q2	TON Q3
Injection Mold	Wear Plates, Slides	✓	✓	--	--	✓	✓
	Bushings, Side Cores, Angle Ejector Rods	✓	--	--	--	✓	✓
Stamping Die	Slides, Bushings	✓	--	--	--	✓	✓
Deep Drawing	Blank Holders, Dies, Punches	--	--	✓	✓	--	--
Tube Forming	Titanium Welded Tube	--	--	✓	✓	--	--
	Forming Rolls	--	--	✓	✓	--	--
Tube Bending	Wiper Dies	✓	--	--	--	--	✓
Steel Industry	Mandrels, Balls	--	✓	--	--	--	✓
	Pressure Blocks, Large Hold Down Screws	✓	--	--	--	--	✓
Others	Valve Parts, Pump Parts	✓	--	--	--	✓	✓
	Pickling Hooks	✓	--	--	--	--	--
	High Strength Clamps	✓	✓	--	--	✓	✓
	Cams, Gears, Worm Gears	✓	--	--	--	✓	✓

TON™ High-Copper Series											
Alloys	Chemical Composition %						Properties				
	Beryllium Be	Cobalt Co	Nickel Ni	Silicon Si	Chromium Cr	Zirconium Zr	Thermal Conductivity W/m-K	Hardness HB	Elongation %	Density g/cm <sup>3</sup>	
TON 100	1.9	0.4	--	--	--	--	107	370	5	8.25	
TON 150	--	--	7.0	2.0	1.0	--	152	260	6	8.69	
TON 200	--	--	2.4	0.6	0.5	--	212	200	12	8.71	
C17500	0.6	2.6	--	--	--	--	208	220	12	8.61	
C17510	0.4	--	1.8	--	--	--	208	220	12	8.77	
C18150	--	--	--	--	1.0	0.2	323	150	16	8.89	

**Notes:** Cu + Sum of Named Elements, 99.5% min.  
Typical values measured at room temperature, 20°C(68°F).

### Material Properties

Excellent Thermal Conductivity & Electrical Conductivity, High Strength, High Hardness, Heat Resistance, Retains Strength at Elevated Temperatures, Wear Resistance, Corrosion Resistance

### Typical Applications

Categories	Products	Alloys					
		TON 100	TON 150	TON 200	C17500	C17510	C18150
Injection Mold	Cores, Cavities, Inserts, Ejector Pins	✓	✓	✓	--	--	--
	Ingate Sleeves	✓	✓	✓	✓	✓	--
	Hot Runner Nozzles	✓	✓	✓	✓	✓	✓
Blow Mold	Cavities, Inserts, Pinch-offs	✓	✓	✓	--	--	--
Casting Mold	Low Pressure Casting Molds	--	✓	✓	✓	✓	✓
Die Casting	Die Casting Plunger Tips	✓	✓	✓	✓	✓	✓
Resistance & Stud Welding	Resistance Welding Tips, Wheels and Fixtures	✓	✓	✓	✓	✓	✓
	Stud Welding Collets and Tips	--	✓	✓	✓	✓	✓
Others	Current Carrying Arms, Shafts	--	--	✓	✓	✓	✓
	Electrical Switches, Relay Parts	✓	--	--	✓	✓	✓
	Electrode Holders	--	--	✓	✓	✓	✓
	Continuous Casting Crystallizers	--	--	✓	✓	✓	✓

※ Please ask us about your other copper alloy requirements!