



# Technical Data Sheet

## AMPCO® 18

AMPCO® 18 is a high-performance bronze alloy known for its exceptional properties and specifications. This alloy has a compact grain structure and excellent physical properties as a result of careful phase distribution and hot working during the extrusion process. The mechanical characteristics of this alloy can be varied by heat treatment (AMPCO® 18.136, 18.22 & 18.23).

### Key Features:

- ▶ Food certified by ISEGA
- ▶ Good sliding properties
- ▶ Corrosion resistant
- ▶ Wear & fatigue resistant
- ▶ High strength combined with good ductility & toughness
- ▶ No nickel contamination & no galling against stainless steel
- ▶ Hydrogen compatible according to DIN EN ISO 17081



### Nominal Composition:

Copper (Cu)	Aluminum (Al)	Iron (Fe)	Others
Balance	10.5%	3.5%	max. 0.5%

### Applications:

- ▶ Bushings, bearings, worm wheels, valve seats & guides, pump rods, guide pin bushings, gibs & slides
- ▶ Screw down nuts, slippers, gears & wedges in rolling mills
- ▶ Applications in hydrogen atmosphere
- ▶ Pill pressing
- ▶ Roller coaster brakes
- ▶ Various parts used in process, marine & related industries



### Hydrogen Compatibility:

Samples have been loaded according to DIN EN ISO 17081 and tested using slow strain rate tensile tests (SSRT) without any indication of embrittlement. However, the producer of final parts should demonstrate compatibility in hydrogen or hydrogen bearing environments since semi-finished product forms are in general modified and may become susceptible for embrittlement.



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Mechanical Properties (Nominal values)	Sand Casted	Continuous Casted	Centrifugally Casted	Extruded	Forged	Rolled
Tensile Strength $R_m$ (MPa)	620	646	724	708	724	724
Yield Strength $R_{p0.5}$ (MPa)	269	267	282	361	296	296
Elongation $A_5$ (%)	14	16	18	13	15	15
Brinell Hardness (10/3000)	179	179	183	194	187	187
Compressive Strength $R_{mc}$ (MPa)	938	938	956	997	990	990
Shear Strength $R_{cm}$ (MPa)	400	400	400	441	420	420
Modulus of Elasticity $E$ (GPa)	110	111	110	117	115	115
Charpy $a_k$ (J)	13.5	-	19	13	32	32
Izod $a_k$ (J)	20.3	-	27	21	30	30
Fatigue (100 million cycles) $\sigma_N$ (MPa)	221	-	228	246	240	240

### Physical Properties:

Density $\rho$ (g/cm <sup>3</sup> )	Coefficient of Expansion $\alpha$ (10 <sup>-6</sup> /K)	Thermal Conductivity $\lambda$ (W/m·K)	Electrical Conductivity (% I.A.C.S.)	Specific Heat $c_p$ (J/g·K)
7.45	16.2	63	14	0.42

### Machining Parameters:

Operation	Cutting Speed $v_c$ (m/min)	Feed $f$ (mm/rev)	Depth $a$ (mm)	Tool Specification
Milling – Roughing	110 - 160	0.1 - 0.4	up to 4	K10 - K20
Milling – Finishing	90 - 115	0.05 - 0.1	0.1 - 0.5	K10 - K20
Turning – Roughing	150 - 200	0.1 - 0.2	up to 2	K10 - K20
Turning – Finishing	180 - 250	0.05 - 0.1	0.1 - 0.2	K10 - K20

Scan the QR Code to view our machining recommendations:



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