



## Technical Data Sheet

# AMPCO® 21

AMPCO® 21 is a high-performance aluminum bronze alloy known for its exceptional wear resistance and unique metallurgical properties. This alloy contains elevated levels of aluminum and iron, resulting in the presence of the hard gamma 2 phase, which measures approximately 400 HB. Through precise metallurgical control, this hard constituent is uniformly distributed throughout the material, giving this aluminum bronze alloy its remarkable ability to resist wear and abrasion.

### Key Features:

- ▶ Good sliding properties
- ▶ Suitable for high surface pressure
- ▶ High strength & hardness
- ▶ Wear-resistant
- ▶ Corrosion resistant
- ▶ High compressive strength
- ▶ Compact grain structure
- ▶ No nickel contamination & no galling against stainless steel

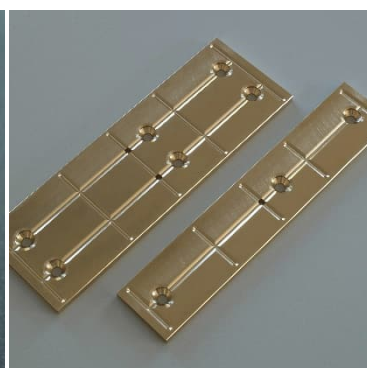


### Nominal Composition:

Copper (Cu)	Aluminum (Al)	Iron (Fe)	Manganese (Mn)	Others
Balance	13.1%	4.4%	2.0%	max. 0.5%

### Applications:

- ▶ Sliders in injection molding tools
- ▶ Tube bending mandrels
- ▶ Centerless grinding work rest blades
- ▶ Sliding plates & wear strips
- ▶ Plain bearings & guide bushings
- ▶ Die rings, rolls & tools in forming, bending & drawing operations
- ▶ Applications in plastic processing & steel industry



AMPCO® 21 is used in a wide variety of industries due to its superior properties. This high-performance aluminum bronze alloy is particularly well suited for use in guide port bushings and wear strips, where it replaces hardened steel and provides superior wear resistance. In addition, the alloy excels as a work rest blade for centerless grinding of steel bars. Its versatility and exceptional durability make it an indispensable material in industries seeking to improve product quality, extend tool life, and reduce production costs.



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Mechanical Properties (Nominal values)	Sand Casted	Continuous Casted	Centrifugally Casted	Extruded	Forged
Tensile Strength $R_m$ (MPa)	517	703	552	735	724
Yield Strength $R_{p0.5}$ (MPa)	379	407	379	407	407
Elongation $A_5$ (%)	1.5	1	1.5	1	1
Brinell Hardness (10/3000)	285	302	285	286	286
Compressive Strength $R_{mc}$ (MPa)	1206	1227	1310	1168	1335
Compressive Yield Strength $R_{pc0.1}$ (MPa)	379	-	483	382	-
Shear Strength $R_{cm}$ (MPa)	414	414	448	413	448
Modulus of Elasticity $E$ (GPa)	103	105	103	110	105
Charpy $a_k$ (J)	2.7	3	2.7	2.7	3
Izod $a_k$ (J)	2.7	3	2.7	2.7	3

### 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)
7.2	16.2	42	10	0.42

### Machining Parameters:

Operation	Cutting Speed $v_c$ (m/min)	Feed $f$ (mm/rev)	Depth $a$ (mm)	Tool Specification
Milling – Roughing	90 - 120	0.1 - 0.2	up to 2.5	K10 - K20
Milling – Finishing	75 - 110	0.05 - 0.1	0.1 - 0.5	K10 - K20
Turning – Roughing	120 - 180	0.1 - 0.2	up to 1.5	K10 - K20
Turning – Finishing	150 - 200	0.05 - 0.1	0.1 - 0.2	K10 - K20

Scan the QR Code to view our machining recommendations:



Contact us

