



# Technical Data Sheet

## AMPCO<sup>®</sup> M4

AMPCO<sup>®</sup> M4 is an exceptional aluminum bronze alloy known for its remarkable properties. This high-performance material has mechanical properties that exceed those of conventional nickel-aluminum bronzes, comparable to beryllium copper at a lower cost and without the beryllium copper industrial hygiene requirements.

### Key Features:

- ▶ Food certified by ISEGA
- ▶ High mechanical strength
- ▶ Good sliding properties
- ▶ Corrosion resistant
- ▶ Wear-resistant
- ▶ Heat resistant at elevated temperatures
- ▶ Compliant with AMS 4590 for extrusions & AMS 4881 for castings

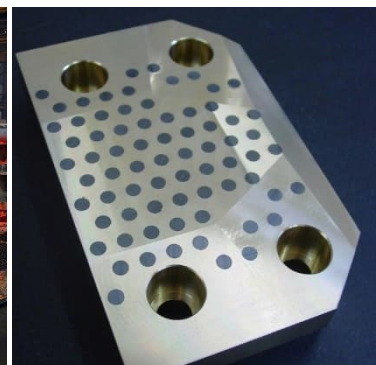


### Nominal Composition:

Copper (Cu)	Aluminum (Al)	Iron (Fe)	Nickel (Ni)	Manganese (Mn)	Others
Balance	10.5%	4.8%	5.0%	1.5%	max. 0.5%

### Applications:

- ▶ Aircraft landing gear bearings & bushings
- ▶ Gear wheels
- ▶ Wear & guide plates
- ▶ Bending dies
- ▶ Applications requiring high mechanical strength at elevated temperatures
- ▶ Various parts used in steel mills
- ▶ Applications in marine & aerospace industry



AMPCO<sup>®</sup> M4 was initially developed as an aircraft specification alloy for gears in retractable landing assemblies, engine spacer bearings and other similar applications. It is rapidly growing in use where higher mechanical properties at elevated temperatures together with corrosion-resistant properties are required.



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Mechanical Properties (Nominal values)	Sand Casted	Centrifugally Casted	Forged Rounds	Forged Plates	Extruded	
					Ø ≤ 1"	Ø 1" – 4"
Tensile Strength R <sub>m</sub> (ksi)	130	135	116	111	145	140
Yield Strength R <sub>p0.5</sub> (ksi)	105	105	72	64	115	105
Elongation 2" (%)	4	6	5	4	8	8
Brinell Hardness (10/3000)	269	293	260	255	286	286
Rockwell Hardness (HRC)	27	30	26	25	29	29
Compressive Strength R <sub>mc</sub> (ksi)	175	180	192	167	192	192
Compressive Strength R <sub>pc0.1</sub> (ksi)	105	110	100	101	106	100
Shear Strength R <sub>cm</sub> (ksi)	80	80	78	76	78	78
Modulus of Elasticity E (ksi)	18000	18000	18000	16700	18000	18000
Charpy a <sub>k</sub> (ft·lbs)	4	5	5	3.4	5	5
Fatigue (100 million cycles) σ <sub>N</sub> (ksi)	37	37	51	36	51	51

### Physical Properties:

Density ρ (lbs/in <sup>3</sup> )	Coefficient of Expansion α (in/in/°F)	Thermal Conductivity λ (W/m·K)	Electrical Conductivity (% I.A.C.S.)	Specific Heat c <sub>p</sub> (BTU/lb·°F)
0.269	9·10 <sup>-6</sup>	42	8.2	0.107

### Machining Parameters:

Operation	Cutting Speed v <sub>c</sub> (m/min)	Feed f (mm/rev)	Depth a (mm)	Tool Specification
Milling – Roughing	100 - 150	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:



Contact us

