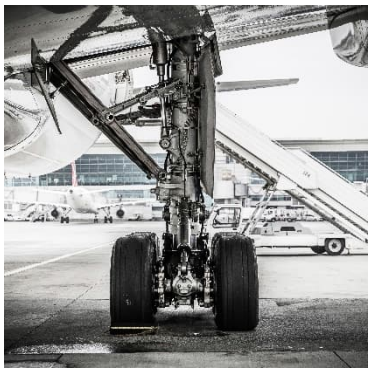
Technical Data Sheet

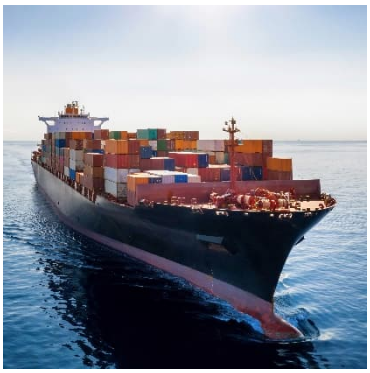
AMPCO® M4

AMPCO® 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



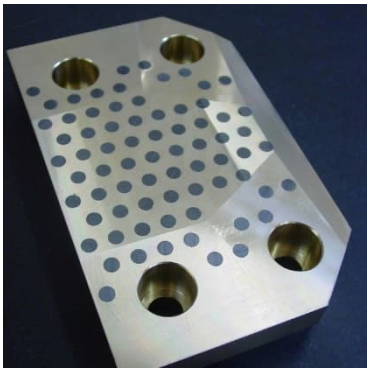


Nominal Composition:

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® 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	
					≤ 25.4 mm	25.4 - 101.6 mm
Tensile Strength R_m (MPa)	896	930	800	765	1000	965
Yield Strength $R_{p\,0.5}$ (MPa)	724	724	500	440	793	724
Elongation A_5 (%)	4	6	5	4	8	8
Brinell Hardness (10/3000)	269	293	260	255	286	286
Compressive Strength R_{mc} (MPa)	1206	1241	1324	1150	1324	1324
Compressive Strength $R_{pc0.1}$ (MPa)	724	758	689	700	731	689
Shear Strength R_{cm} (MPa)	552	552	538	525	538	538
Modulus of Elasticity E (GPa)	124	124	124	115	124	124
Charpy a_k (J)	5.4	6.8	7	4.5	7	7
Fatigue (100 million cycles) σ_N (MPa)	255	255	352	245	352	352

Physical Properties:

Density ρ (g/cm³)	Coefficient of Expansion α (10^{-6}/K)	Thermal Conductivity λ (W/m·K)	Electrical Conductivity (% I.A.C.S.)	Specific Heat c_p (J/g·K)
7.45	16	42	8.2	0.45

Machining Parameters:

Operation	Cutting Speed v_c (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