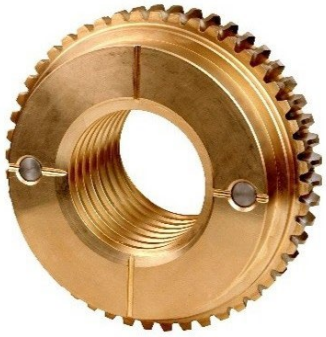
Technical Data Sheet

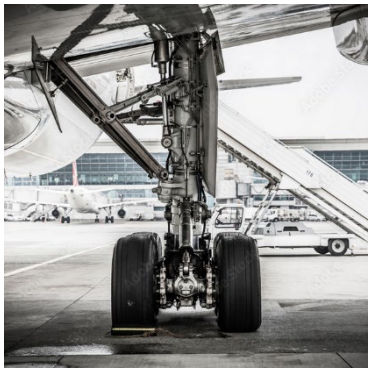
AMS 4640

AMS 4640 is an exceptionally high-strength aluminum bronze alloy with mechanical properties that exceed those of typical nickel-aluminum bronze. This superiority is due to the unique manufacturing process which makes the alloy ideal suited for heavy duty applications under conditions of high stress, friction, abrasive wear and corrosion. It meets the stringent specifications of AMS 4640 and ensures reliable performance in a range of demanding mechanical and corrosive scenarios.

Key Features:

- High mechanical properties
- Good sliding properties
- Corrosion resistant
- High elongation & ductility
- Spark resistant
- High yield point
- Resistant to abrasive wear, friction, deformation & chemical erosion
- Compliant with AMS 4640



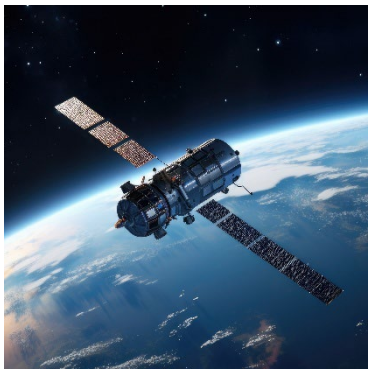


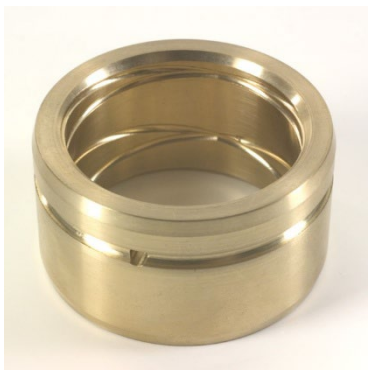
Nominal Composition:

Copper (Cu)	Aluminum (Al)	Nickel (Ni)	Iron (Fe)	Manganese (Mn)	Others
Balance	10.0%	5.0%	2.5%	1.0%	max. 0.5%

Applications:

- Aircraft bearings & bushings
- Pump & marine shafts
- Valve guides, spindles & seats
- Machine tool parts & wear rings
- Non-sparking safety tools & components in explosive atmospheres
- Suitable for heavy-duty, high stress, high friction & corrosive environments
- Applications in aerospace, oil & gas, marine & manufacturing industry





AMS 4640 is used in a wide range of demanding applications. Its exceptional properties make it a top choice for applications involving abrasive wear, friction, deformation, and chemical erosion. Common applications include aircraft bearings and bushings, pump and marine shafts and wear rings, valve spindles and seats, and machine tool components. In addition, its spark-resistant properties make it a reliable option for safety tools and machine tool components used in explosive environments.

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Mechanical Properties (Nominal values)	Extruded		
	Ø ≤ 25.4 mm	Ø 25.4 - 50.8	Ø > 50.8 mm
Tensile Strength R_m (MPa)	814	793	772
Yield Strength $R_{p\ 0.5}$ (MPa)	517	448	420
Elongation A_5 (%)	15	18	20
Brinell Hardness (10/3000)	228	217	212
Compressive Strength R_{mc} (MPa)	1034	1000	965
Compressive Yield Strength $R_{pc0.1}$ (MPa)	303	-	-
Shear Strength R_{cm} (MPa)	483	476	448
Modulus of Elasticity E (GPa)	117	117	117
Charpy a_k (J)	11.3	11.3	11.3
Izod a_k (J)	13.6	13.6	13.6
Fatigue (100 million cycles) σ_N (MPa)	262	255	255

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)
7.53	16.2	46	9	0.45

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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