Technical Data Sheet

AMPCO® 45

AMPCO® 45 is a remarkable high-strength alloy known for its exceptional mechanical properties that go beyond traditional nickel-aluminum bronzes. Its unique manufacturing process results in superior performance, making it ideal for heavy-duty, high-stress mechanical and corrosive applications. This alloy meets AMS 4640 and ASTM B 150 specifications, ensuring quality and reliability.

Key Features:

- High yield point & strength
- Good sliding properties
- Corrosion resistant
- High elongation & good ductility
- Spark resistant & ATEX certified
- Resistant to abrasive wear, friction, deformation & chemical erosion
- Compliant with AMS 4640 & ASTM B 150

Nominal Composition:

Copper (Cu)	Aluminum (Al)	Iron (Fe)	Nickel (Ni)	Manganese (Mn)	Others
Balance	10.0%	2.5%	5.0%	1.5%	max. 0.5%

Applications:

- Aircraft bearings & bushings
- Pump & ship shafts
- Valve guides, spindles & seats
- Machine tool parts & wear rings
- Used in heavy machinery
- Non-sparking safety tools & components in explosive atmospheres
- Applications in aerospace, oil & gas, marine & manufacturing industry

AMPCO® 45 is used in a wide variety of industries due to its superior properties. This high-strength alloy is essential in demanding environments where abrasive wear, friction, deformation, and chemical erosion are prevalent. Whether in extreme conditions or in heavy machinery, this aluminum bronze alloy provides exceptional reliability and durability, making it an essential material for many industrial applications.

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Mechanical Properties (Nominal values)	Extruded			Forged			
	Ø ≤ 1”	Ø 1 - 2”	Ø > 2”	Ø ≤ 1”	Ø 1 - 2”	Ø 2 - 3”	Ø > 3”
Tensile Strength R_m (ksi)	118	115	112	118	115	112	114
Yield Strength $R_{p\ 0.5}$ (ksi)	75	65	61	75	65	61	65
Elongation 2” (%)	15	18	20	15	18	20	15
Brinell Hardness (10/3000)	228	217	212	228	217	212	212
Rockwell Hardness (HRB)	98	96	96	98	96	96	96
Compressive Strength R_{mc} (ksi)	150	145	140	150	145	140	-
Compressive Strength $R_{pc0.1}$ (ksi)	44	-	-	44	-	-	-
Shear Strength R_{cm} (ksi)	70	69	65	70	69	65	-
Modulus of Elasticity E (ksi)		17000			17000		
Charpy a_k (ft·lbs)	8	8	8	8	8	8	8
Izod a_k (ft·lbs)	10	10	10	10	10	10	10
Fatigue (100 million cycles) σ_N (ksi)	38	37	37	38	37	37	37

Physical Properties:

Density ρ (lbs/in³)	Coefficient of Expansion α (in/in/°F)	Thermal Conductivity λ (W/m·K)	Electrical Conductivity (% I.A.C.S.)	Specific Heat c_p (BTU/lb·°F)
0.272	$9 \cdot 10^{-6}$	46	9	0.1

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:

Contact us