Technical Data Sheet

AMS 4640

Extruded and drawn rods

Nominal composition:

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

Mechanical and physical properties	Units	Nominal Values		
	mm	Ø ≤ 25.4	Ø 25.4 - 50.8	Ø > 50.8
Tensile strength R_m	MPa	814	793	772
Yield strength $Rp_{0.5}$	MPa	517	448	420
Elongation A_5	%	15	18	20
Brinell hardness	HBW 10/3000	228	217	212
Rockwell hardness	HRB	98	96	96
Reduction of area ψ	%	15	20	20
Compressive strength R_{mc}	MPa	1034	1000	965
Compressive strength, 0.1 % perm. set	MPa	303	…	…
Proportional limit in compression R_{pc}	MPa	276	276	262
Shear strength R_{cm}	MPa	483	476	448
Modulus of elasticity E	GPa	117	117	117
Charpy $_{aK}$	J	11.3	11.3	11.3
Izod $_{aK}$	J	13.6	13.6	13.6
Fatigue (100'000'000 cycles) σN	MPa	262	255	255
Density ρ	g / cm³	7.53		
Coefficient of expansion α	10^{-6} / K	16.2		
Thermal conductivity λ	W / m · K	46		
Electrical conductivity γ	m / Ω · mm²	5		
Electrical conductivity	% I.A.C.S.	9		
Specific heat c_p	J / g · K	0.45		

Assurances given with respect to properties or uses are subject to written approval from AMPCO METAL.

Per AMS 4640 specification, minimum hardness is not applicable as long as requirements for tensile are met.

AMS 4640 is a high strength alloy with mechanical properties beyond the range of commercial nickel-aluminium bronzes. This is due to its special manufacturing process.

APPLICATIONS:

AMS 4640 is recommended for heavy-duty high-loaded mechanical and corrosive applications. Typical applications involving abrasive wear, friction, deformation, chemical erosion include:

- aircraft bearings / bushings
- pump and marine shafts and wear rings
- valve spindles and seats
- machine tool parts

The spark-resistance properties make it suitable for safety tools and machine tool components in explosive environments.

Specification: AMS 4640