GKN POWDER METALLURGY - Aluminum

PM-6061

MATERIAL DATA SHEET

Names: ANSI Designation: **6061/AlN/01p**; GKN Designation: **6061-1A**

Description: Age Hardenable, higher Conductivity aluminum metal-matrix-composite (MMC) produced via conventional press-and-sinter powder metallurgy (PM) processing. Secondary (cold/warm/hot) forming operations can be employed for parts produced using this material.

Applications: Electrical and Thermal management solutions where additional strength is required including, but not limited to: battery terminals, busbars, electrical connectors, heat sinks, heat spreaders, and other components requiring high electrical & thermal conductivity. Also for structural applications requiring gas or liquid tight sealing and/or corrosion resistance or combined strength and conductivity.

Chemistry

Limits	GKN Specification (Wt.%)							
	Al	Cu	Mg	Si	Sn	Fe	N	Other
Max	Balance	0.4	1.3	0.6	0.6	0.25	0.75	3.0
Min		0.2	0.9	0-4	0-4	-	0.25	-

Mechanical Properties

Heat Treat Condition	Ultimate Tensile Strength (MPa)	Tensile Yield Strength (MPa)	Total Tensile Elongation (%)	Modulus of Elasticity, Young's (GPa)	Poisson's Ratio (v)	Apparent Hardness, Rockwell
T2	175 MPa	100 MPa	10.0%	60 GPa	0.33	60 HRE
T8	300 MPa	275 MPa	3.5%	65 GPa	0.33	60 HRB

Material properties are typical values obtained from standard test bars according to the referenced standard test methods. These are NOT guaranteed minimum values; specific ranges must be developed for each application and should be derived through functional testing

Physical Properties

	Thermal Conductivity (k)[1]	Thermal Diffusivity (α)[2]	Specific Heat Capacity (C_p)	Electrical Conductivity (%IACS)	CTE, linear
Typical	170 W/m-K	78 m^2/s	0.89 J/g-°C	47% IACS	23.0 µm/m-°C

[1] *Measured via TPS (Transient Plane Source) method per ISO Standard (ISO/DIS 22007-2.2).*

[2] *Calculated via relationship:* $\alpha = \frac{k}{\rho C_p}$