GKN POWDER METALLURGY - Copper

PM-CuEV1

MATERIAL DATA SHEET

Names: MPIF/ANSI Designation: **N/A**; GKN Designation: **Cu(EV1)**

Description: High purity copper 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 to optimize density and properties.

Applications: Electrical and Thermal management solutions including, but not limited to: battery terminals, busbars, electrical connectors, heat sinks, heat spreaders, and other components requiring high electrical & thermal conductivity.

Chemistry

Limits	GKN Specification (Wt.%)		
	Cu	Oxygen	Other
Typical	99.8 (Balance)	0.05	0.15
Max	99.6 (Balance)	0.2	0.2

Mechanical Properties

	Ultimate Tensile Strength (MPa)	Tensile Yield Strength (MPa)	Total Tensile Elongation (%)	Modulus of Elasticity, Young's (GPa)	Poisson's Ratio (ν)	Apparent Hardness, Rockwell
Typical Values	190-200 MPa	60-70 MPa	25-40%	90 GPa	0.31	60 HRH
Notes	*Per MPIF Standard 10*	*Per MPIF Standard 10*	*Per MPIF Standard 10*	*Per MPIF Standard 10*	*Per MPIF Standard 10*	*Per MPIF Standard 43*

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)[2]	Thermal Diffusivity (α)[1]	Specific Heat Capacity (C_p) [1]	Electrical Conductivity (%IACS)	CTE, linear [1]
Typical	374 W/m-K	** m^2/s	** J/g-°C	94% IACS	** µm/m-°C
Minimum	358 W/m-K	** m^2/s	** J/g-°C	90% IACS	** µm/m-°C

[1] *Pending Data from standardized testing*

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