Qnnect
qnnectnow.com

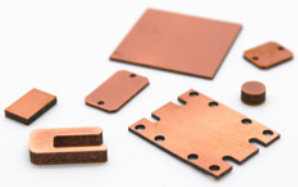
DiaCool™

for Thermal Management

Overview

Efficient thermal management is a necessity for nearly all electronic applications. As the size of electronics shrinks while power density increases, legacy materials often generate hot spots because of insufficient cooling, leading to a drop in performance. DiaCool, a metal-diamond composite material, delivers a device-friendly coefficient of thermal expansion (CTE) and very high thermal conductivity.

COPPER DIAMOND



SILVER DIAMOND

Applications

- Power Packages
- Opto Packaging
- Microwave
- RF MMW Packaging
- Laser Diode Sub Mounts

Ultra-high performance thermal spreaders made with DiaCool easily adapt to any design. It exhibits excellent surface quality for die attach and soldering needs. Because it is easily adaptable to customer-specific designs, it's a cost-effective solution for increasing the long-term reliability of power, RF, and laser diodes, and for any applications where thermal management is vital to longevity.

DiaCool is available in a copper diamond or silver diamond matrix and can be plated with a variety of metals to meet your specific requirements. The material is manufactured in a sandwich-like structure, with the composite material located between layers of pure copper or silver. It can be used for heat sinks, die tabs, and heat spreaders, and it provides a significant advantage over more conventional laminate or MMC materials.

Available Options

Material	Thermal conductivity in W/mK (RT)		CTE (RT)	Density	Metalization types available		Minimum thickness Available	Maximum length and Width
	Thru Plane:	In Plane:			Plating	Thin films		
CU600	600	600	6 - 8 ppm	6.3g/cm3	✓	✓	0,88mm or .035"	140mm (5.500")
AG700	700	700	6 - 7 ppm	6.2g/cm3	✓	✓	1,0mm or .040"	140mm (5.500")
AG850	850	850	5 - 6 ppm	6.07g/cm3		✓	1,5mm or .060"	140mm (5.500")

Solder Preforms (shipped separately or preattached):

AuSn, SAC305, AuSi, AuGe, etc.

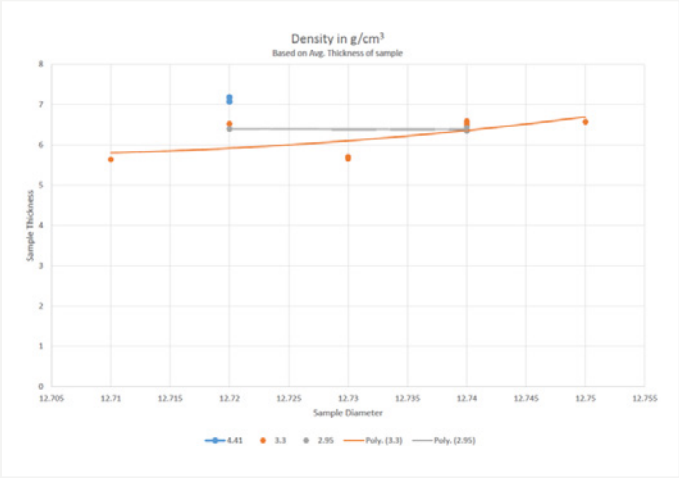
Thermal Management

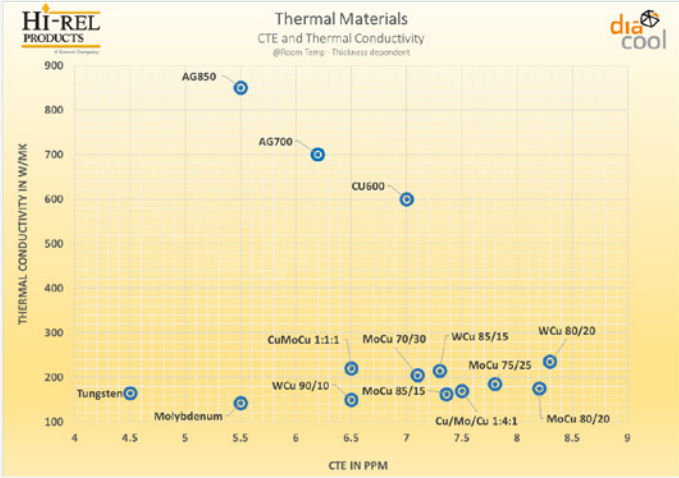
Our Thermal Management Platform offers technically robust, advanced thermal management materials and technologies, such as DiaCool, molybdenum/copper (MoCu), copper/molybdenum copper (CMC), and tungsten/copper (WCu). Our product portfolio consistently exceeds customer expectations for quality, workmanship standards, plating requirements, and ease of use.

Table 2: Calculated $\rho_{average}$ for multiple probe placements.

Specimen ID	Average Volume Resistivity (Ω·cm)
Plate A1	$6.189 \times 10^{-6} \pm 3.2\%$
Plate B1	$6.625 \times 10^{-6} \pm 6.0\%$

Specific Heat	
Copper DiaCool	Silver DiaCool
440 J/Kg.K	310 J/Kg.K





Qnnect

HI-REL ALLOYS
A Qnnect Company

HI-REL PRODUCTS
A Qnnect Company

For Product Info:
hermeticsolutions.com

For Company Info:
qnnectnow.com
info@qnnectnow.com