

EFFECT OF CARBON BLACK CONTENT ON COEFFICIENT OF THERMAL PROPERTIES OF AL/CARBON BLACK COMPOSITES

K. G. SRINIVAS¹, N. CHIKKANNA², MANOHAR. H. S³ & SREENIVASA REDDY. M⁴

¹Assistant Professor, Department of Mechanical Engineering,
RL Jalappa Institute of Technology, Doddaballapur, Karnataka, India

²Professor & Chairman, Aerospace Propulsion Technology,
VTU, Muddenahalli, Chikkaballapur, Karnataka, India

³Professor & Head, PG & Research, Department of Mechanical Engineering,
SEA College of Engineering and Technology, Bangalore, Karnataka, India

⁴Professor & Principal, RL Jalappa Institute of Technology, Doddaballapur, Karnataka, India

ABSTRACT

Experimental investigation of the effect of carbon black on coefficient of thermal expansion (CTE) of Al/carbon black composites is presented for electronic packaging applications. Liquid metallurgy casting was used to fabricate Al base alloy and different wt. % of carbon black reinforced Al black composites. The CTE and thermal properties of both Al and its composites were measured between 30 and 500 °C is used NETZSCH DIL 402 E and Laser Flash Apparatus thermal analysis. The result shows that the addition of carbon black into the Al matrix was found to significantly decrease the thermal expansion. Thermal expansion increases as the function of temperature due to the softening martial phase. It has been found that thermal conductivity decreases with increase of temperature, but specific heat increases with temperature.

KEYWORDS: Metal Matrix, Al/Carbon Black, CTE, Thermal