

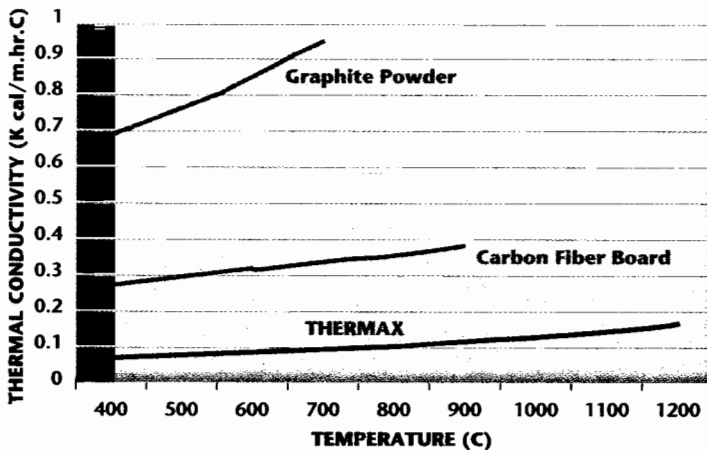
# High Temperature Insulation

*Thermax® Fills Need for Furnaces & Reactors*

High temperature processes such as the production of graphite, ceramics, metal carbides, and tungsten, require high performance insulation materials. Insulation is essential to minimize energy costs and to maintain ambient plant temperatures in a range acceptable for personnel and equipment.

Thermax® carbon black addresses the three significant mechanisms of heat loss in processes operating above 1000°C. The closely packed bed of carbon particles serves to limit both conductive and convective heat transfer through the gaseous phase. Second, the inherent thermal conductivity of the amorphous carbon itself is relatively low. Most importantly, thermal carbon black strongly absorbs infrared radiation, particularly shorter wavelength IR generated at high temperatures, thus minimizing radiative heat loss. The overall apparent thermal conductivity of Thermax® is shown in Graph 1, compared with other materials.

### Apparent Thermal Conductivity

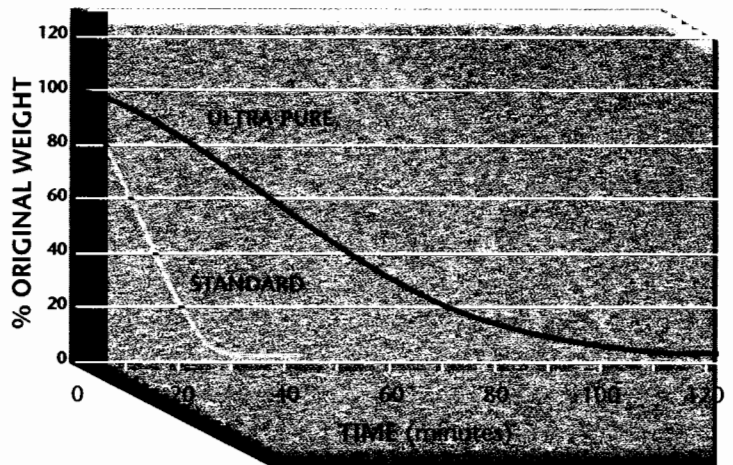


## Ultra-Pure, Ultra Performance

Cancarb's standard Thermax® Powder performs well in many insulation applications. However, where insulation life and furnace rebuild times are important, Thermax® Ultra-Pure is the product of choice.

The presence of any oxygen in the insulation space will result in oxidation loss of carbon. Beyond the cost of the carbon itself, labor to replace insulation or to rebuild a furnace adds cost to the process. The unique purity and inert surface character of Thermax® Ultra-Pure makes it significantly more resistant to oxidation, extending its useful life. While only a trial can demonstrate the benefit in any particular operation, laboratory work suggests increases in insulation life of more than two-fold are possible. Graph 2 shows the results of thermogravimetric analysis of Thermax® Ultra-Pure, compared to the standard grade, in a severe test conducted at 600°C in air.

### Thermax Carbon Insulation TGA Analysis 600° C. in air



Laboratory studies have also shown that the initial oxidation temperature in air of Thermax® Ultra-Pure is about 550°C, compared with 450°C for the standard grade. Depending upon operating methods, this can translate into a significant saving in turn-around time during furnace rebuilds.

For more information on Thermax® carbon black for high temperature insulation contact us by phone at (403) 527-1121, by fax at (403) 529-6093 or by e-mail at [customer\\_service@cancarb.com](mailto:customer_service@cancarb.com). ☼