

# Carbon-Carbon Trays & Grids

Carbon-Carbon (C/C) composite trays and grids exhibit superior dimensional stability in high-temperature applications. As a lightweight, high-strength material, C/C possesses an extremely low coefficient of thermal expansion. Consequently, it shows negligible thermal deformation and maintains its mechanical strength at temperatures where conventional metals would warp or fail.



# Key Benefits of using C/C composite Trays & Grids

## Metals and Carbon-Carbon composites comparison



Carbon-Carbon (C/C) composites offer a compelling alternative to metals and heat-resistant steels in high-temperature industrial processes. These advanced materials significantly enhance efficiency by enabling faster processing, reducing energy consumption, and extending equipment lifespan.

A key advantage of C/C composites is their superior thermal stability, which translates to longer tray life and continuous production. Unlike heat-resistant steel, which deforms after repeated use, C/C composites exhibit no deformation and maintain high strength, even after prolonged exposure to elevated temperatures. This dimensional stability also contributes to higher quality products and reduced energy waste.

## Graphite and Carbon-Carbon composites comparison



C/C composites are reinforced with carbon fibers, so compared to graphite, they are stronger, more elastic, less likely to crack, and easier to handle.

Graphite, a naturally occurring form of carbon, has a layered crystalline structure that makes it electrically and thermally conductive and lubricious, but relatively brittle. It is commonly used in lubricants, battery electrodes, and refractory materials.

In contrast, carbon-carbon composites are engineered materials formed by embedding carbon fibers in a carbon matrix. This structure gives them exceptional strength and stiffness even at high temperatures, light weight, and excellent thermal shock resistance. These properties make them ideal for demanding applications such as aerospace components (heat shields, rocket nozzles), high-performance brake discs, and high-temperature furnace components.

## Graphite Tray



15mm thick layers - 4 tiers

## C/C Composite Tray



5mm thick layers - 5 tiers

		<u>Weight of Parts</u>	<u>Weight of Trays</u>	<u>Total Weight</u>	<u>Heat Capacity</u>	<u>Effective Heat Available</u>
<u>Graphite (15mm thick)</u>	<u>Base + 4 tiers</u>	<u>80 kg</u>	<u>70 kg</u>	<u>150 kg</u>	<u><math>2.0 \times 10^7</math> cal</u>	<u>41%</u>
<u>C/C Composite (5mm thick)</u>	<u>Base + 5 tiers</u>	<u>100 kg</u>	<u>29.1 kg</u>	<u>129.1 kg</u>	<u><math>1.5 \times 10^7</math> cal</u>	<u>68%</u>
<u>Result</u>	<u>+ 1 Tier</u>	<u>+25%</u>	<u>58% weight loss</u>	<u>14% weight loss</u>	<u>24% decrease</u>	<u>27% effective</u>

New strategies boosted parts processed by 25% and cut heat capacity by 24%. While parts increased, furnace load weight decreased by 14%, indicating greater efficiency and potential energy savings. C/C material also enhanced tray strength, improving handling and management.

- Increased Productivity
- Energy Efficiency
- Simplified Material Handling
- Extended Product Lifespan

## Custom Trays & Grids Design

We customize Carbon-Carbon Trays and Grids to meet your specific requirements, offering a range of designs from machined plate trays to heavy-duty grids. Contact us for detailed design information.



### Have Questions or Ready to Order?

Our engineering team is ready to help you select the perfect trays and grids for your needs.

- Visit our Website: [www.acrosscc.com](http://www.acrosscc.com)
- Call Us Today: (310) 635 3555
- Email for a Quote: [info@acrosscc.com](mailto:info@acrosscc.com)