



Product Used
Spaceloft® 6251

Aerogel Insulation Enables Thin Laptop Desks With Exceptional Heat Protection

Aerogel easily integrated into product design, exceeding thermal expectations and driving significantly higher unit sales

Challenges

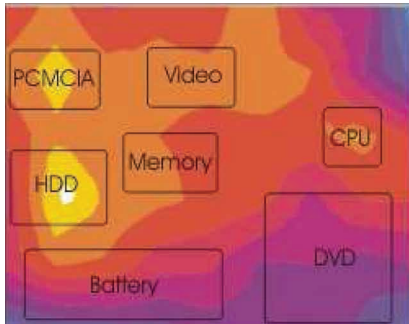
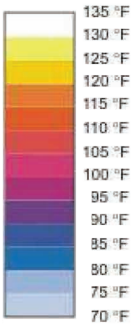
- Develop aerogel inserts for laptop desks to block intense heat from bottom of laptop computers.
- Reduce heat transfer to the extent a 130°F (55°C) surface temperature creates less than a 5°F temperature rise across the laptop desk over a four-hour period in a 70°F (21°C) ambient environment, while ensuring internal laptop temperatures remain constant or decrease.
- Ensure no thermal degradation from compression over time.
- Increase the thickness of the product by no more than 0.3" and the weight by no more than 4 oz.
- Ensure the encapsulated aerogel insulation is acoustically silent when flexed (no 'crinkle' sounds).
- Design the inserts to match the product styling and be installed at the point of fulfillment in under a minute without any tools.

Aerogel Solution

- An aerogel solution of 6 mm **Spaceloft® 6251** was chosen for the laptop desk inserts.
- The inserts were strategically sized and shaped to integrate into the product design and stitching with no visible exterior changes.

Benefits

- The Spaceloft 6251 inserts far exceeded the heat transfer goals, showing less than a 2°F temperature rise across the laptop desk over an eight-hour period in a 70°F (21°C) ambient. Additionally, internal laptop temperatures decreased below normal.
- Testing showed no thermal degradation due to compression.
- Product thickness increased 0.25", and product weight increased less than 3 oz – significantly better than alternative insulations.
- The inserts met encapsulation goals, required no changes to product styling, and could be installed in under 40 seconds, exceeding goal.



Thermal map of a laptop computer bottom after 30 minutes.



Thermal map of the bottom of an aerogel laptop desk after six hours with same laptop computer resting on it.

Bottom of desk (the part touching a person's legs) displays less than a 5°F temperature rise in 70°F (21°C) ambient despite a hot computer on top of it.



Encapsulated aerogel is easily inserted into laptop desk design.



Aerogel adds only 0.25" to total product thickness, keeping it very thin.