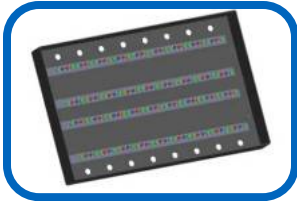


LCD APPLICATIONS

THERMAL SOLUTIONS FOR DISPLAYS



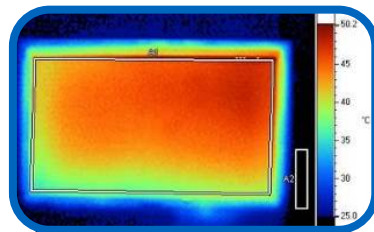
High thermal conductivity SPREADERSHIELD™ (300-500 W/m-K) heat spreaders significantly improve thermal management for liquid crystal displays (LCDs), resulting in a differentiated LCD product.

- Higher brightness
 - Lower LED junction temperature
 - Improved CCFL temperature uniformity
- Improved image uniformity
 - Uniform temperature yields uniform light output
- Longer lifetime
 - CCFL/LEDs
 - Polarizers/diffusers/brightness enhancing films
- Lower power consumption
- Lower cost
 - Lower CCFL/LED count at equivalent brightness
 - Optimized chassis design



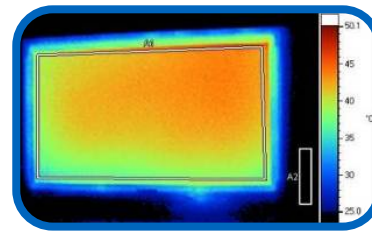
SPREADERSHIELD products are ideal for large-area LCD applications.

PROVEN RESULTS



**AS RECEIVED
(NO SPREADERSHIELD)**

Max Temp: 49.8°C
Avg Temp: 43.5°C



**WITH SPREADERSHIELD
IN 400 W/M-K**

Max Temp: 45°C ▪ **REDUCED BY 4.8°C!**
Avg Temp: 41.3°C ▪ **REDUCED BY 2.2°C!**

Results based on a 40" CCFL Direct lit LCD TV.
(LED-based backlight testing had similar results.)

- After 2 hours of video operation
- Infrared distribution on front of IR camera
- 23.5°C Ambient temperature

Email us at egraf@graftech.com to request a sample today!