NEOGRAF™ SOLUTIONS

eGRAF®

SPREADERSHIELD™ Flexible Graphite Cooling Fins

TECHNICAL DATA SHEET 522

Product Overview

Next-generation electric automotive and marine batteries will need to charge quickly and have extended lifetimes. For this, they need thermal-management materials that are thin, lightweight, and long lasting. These materials must not only cool the cells under harsh operating conditions but must also prevent propagation in the event of a cell failure. SPREADERSHIELD Flexible Graphite Cooling Fins directly replace thick and heavy aluminum in these lithium ion transportation battery modules, where energy density, specific energy, safety, and performance are critical.

Applications

In both battery electric vehicles (BEVs) and hybrid electric vehicles (HEVs), traditional thermal management metals, such as aluminum, result in battery modules that are unacceptably thick and heavy. SPREADERSHIELD Flexible Graphite Cooling Fins directly replace aluminum to:

- Extended cell lifetimes
- Enable fast charge/discharge operations
- Prevent propagation in the event of a cell failure

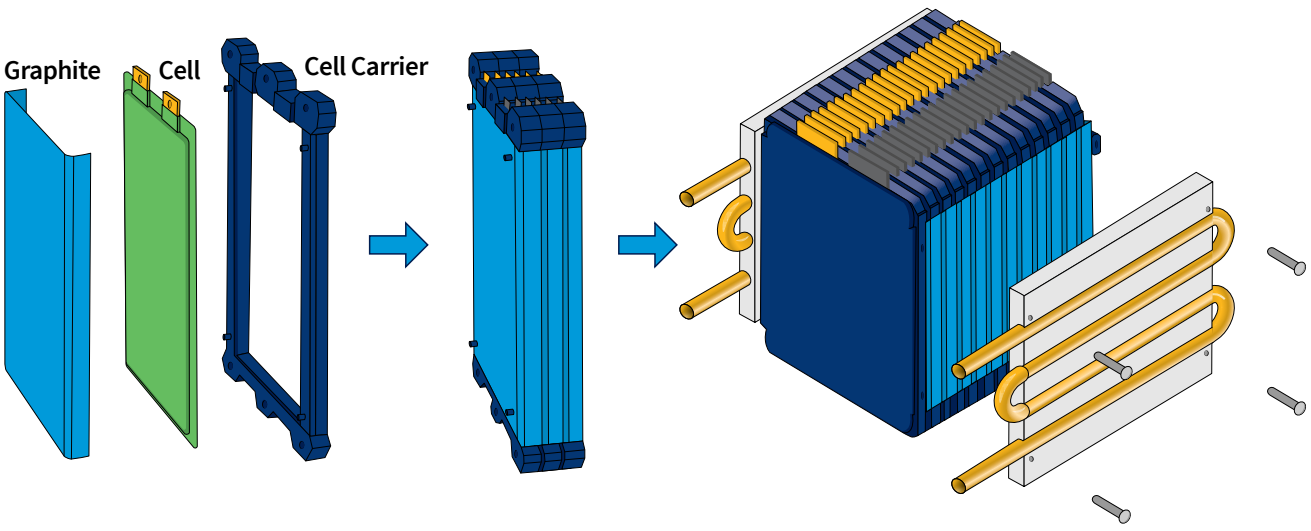
Application Notes

SPREADERSHIELD Flexible Graphite Cooling Fins are designed for direct aluminum substitution in pouch cell battery module designs. For Fast Charging and Extended Cell lifetimes, a foam pad is typically installed between cells to maintain constant pressure between the graphite and the cell. For Propagation Prevention, an additional high temperature film is typically added to seal each cell, helping prevent the escape of hot gasses. Please consult a NeoGraf Solutions Applications Engineer for more design information.

Certifications

SPREADERSHIELD Flexible Graphite Cooling Fins are composed exclusively of graphite (carbon) enclosed in thin dielectric PET plastic laminates. As such, they meet all of the common environmental and chemical standards.

- RoHS
- REACH
- UL 94 V-0
- Lead / Halogen Free
- Conflict Free



Drawings from NGS patent US 9,774,063 B2

SPREADERSHIELD™ FLEXIBLE GRAPHITE COOLING FINS

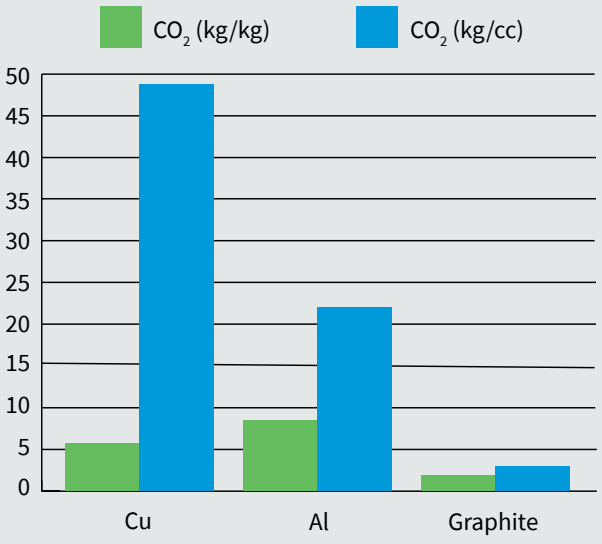
Typical Properties*

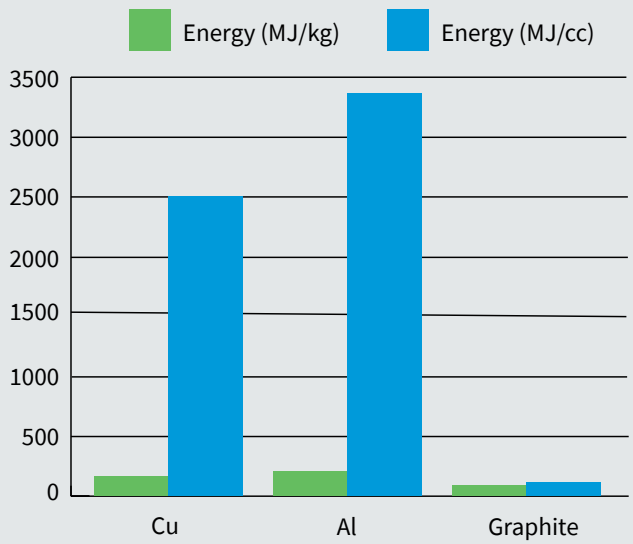
CHARACTERISTIC	UNIT	SS400	SS500
Product Thickness (without Coatings)	mm	0.051 – 0.940	0.076 – 0.760
Thermal Conductivity (In Plane)	W/m·K	400	500
Thermal Conductivity (Through Plane)	W/m·K	3.7	2.8
Roll Width	mm	355 – 610	305 – 508
Roll Length	m	33 – 100	33 – 100
Operating Temperature	°C	–40 to +150	–40 to +150
UL Flammability Rating	-	94 V-0 (Non-flammable)	94 V-0 (Non-flammable)
RoHS Compliant	-	Yes	Yes
Lead / Halogen Free	-	Yes	Yes
REACH Compliant	-	Yes	Yes
Conflict Free Mineral	-	Yes	Yes
Dielectric Coatings	-	0.025mm PET plastic on the top and bottom surfaces	0.025mm PET plastic on the top and bottom surfaces
Adhesive Option	-	Pressure Sensitive Acrylic	Pressure Sensitive Acrylic

* Note:
Properties listed are typical and cannot be used as accept/reject specifications. Please see NeoGraf Solutions Technical Data Sheet 321 and 322 for more information.

CARBON FOOTPRINT

Compared to other common heat spreaders (aluminum and copper), natural graphite has a substantially lower carbon footprint for both $C0_2$ emissions and energy.





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