

# NeoNxGen® Heat Spreaders

## TECHNICAL DATA SHEET 600

### Product Overview

The NeoNxGen® family of flexible graphite thermal management solutions offers high-performance, thick, flexible graphite material designed for the most demanding thermal management challenges in consumer electronics, medical, automotive, and energy storage applications. This advanced graphite heat spreader enables single-layer solutions that previously required multiple layers. NeoNxGen graphite can be die-cut or laminated with plastics or adhesives to create easy-to-install solutions.

### NeoNxGen Products <sup>[1]</sup>

CHARACTERISTIC	N-500
Graphite Thicknesses (µm)	500 ±50
Sheet Size	280 mm x 430 mm
Roll Length (m)	Sheets Only
Thermal Conductivity:	
In-Plane <sup>[2]</sup> (W/m·K)	900
Through-Plane <sup>[3]</sup> (W/m·K)	4.5
Graphite Finish	Matte
Thermal Conductance <sup>[4]</sup> (mW/K)	450
Density (g/cm <sup>3</sup> )	1.9 ±0.1
Electrical Resistivity In-Plane (Ω)	6.8
Electrical Conductivity:	
In-Plane (S/m)	29
Through-Plane (S/m)	0.13
Meets NASA Outgassing Standards? <sup>[5]</sup>	Yes
RoHS/REACH Compliant?	Yes
Lead/Halogen-Free?	Yes
UL Flammability Rating (with or without standard PET/adhesive coatings)	94-V0

## General NeoNxGen Product Characteristics <sup>[1]</sup>

Coefficient of Thermal Expansion, In-Plane (ppm/°C)	-0.4
Coefficient of Thermal Expansion, Through-Plane (ppm/°C)	27.0
Specific Heat (J/g°C @ 50°C)	0.81
Operating Temperature:	
In any atmosphere with standard PET/adhesive coatings: long-term <sup>[6]</sup> (°C)	-30 to +140
In any atmosphere with standard PET/adhesive coatings: short-term <sup>[6]</sup> (°C)	-40 to +149
In an oxygen-containing atmosphere, without coatings (°C)	-250 to +400
In a reducing atmosphere, or vacuum, without coatings (°C)	-250 to +3000

## Part Designation

Every NeoNxGen flexible graphite heat spreader part number specifies the material grade and coating options. It is constructed based on the example below. For additional information on standard coatings, please refer to [Technical Data Sheet 322 - SpreaderShield Design Options](#).

<b>NeoNxGen Graphite Heat Spreader</b>	<b>Plastic/Adhesive Coatings</b>			<b>Envelope Seal</b>
<b>N-500</b>	<b>P1</b>	<b>G</b>	<b>P1A1</b>	<b>EN</b>
Product Grade (includes the thickness in µm)	Top Coating Type(if any)	G Graphite	Bottom Coating Type (if any)	Envelope Seal Designation (if used)

### Notes:

- [1] Properties listed are typical and cannot be used as acceptance or rejection criteria. Product characteristics are subject to change at any time without prior notice. Product characteristics exclude coatings and adhesives.
- [2] In-plane thermal conductivity determined by the [NeoGraf Standard Method for Determination of Thermal Conductivity](#).
- [3] Through-plane thermal conductivity determined using ASTM D5470 method.
- [4] Thermal conductance is defined as the thickness of the spreader times its thermal conductivity. It is an easy way to compare the spreading ability of two different products. The higher the number, the more heat the product will spread.
- [5] Materials meeting outgassing requirements for spacecraft use must have a maximum total mass loss (TML) of 1.0 percent and a maximum collected volatile condensable material (CVCM) of 0.10 percent, as specified in ASTM E 595-77/84/90.
- [6] Short term refers to periods of minutes and hours. Long term refers to periods of days and weeks.

**LEAD. CREATE. CONNECT.**

All products are made in Lakewood, Ohio, USA  
 +1 (800) 253.8003 (Toll-Free in USA) | +1 (216) 529.3777 (International)  
[www.neograf.com](http://www.neograf.com) | [info@neograf.com](mailto:info@neograf.com) | [www.neograf.com/ask-an-engineer](http://www.neograf.com/ask-an-engineer)

NeoGraf Solutions, LLC All Rights Reserved. This information is based on data believed to be reliable, but NeoGraf Solutions LLC makes no warranties, express or implied, as to its accuracy and assumes no liability arising out of its use. The listed data fall within the normal range of product properties but should not be used to establish specification limits or as the sole basis for design. NeoGraf Solutions, LLC's liability to purchasers is expressly limited to the terms and conditions of sale. eGraf®, NeoNxGen®, Graf+®, GrafGuard®, GraFoil®, and GrafCell® are registered trademarks of NeoGraf Solutions, LLC. SpreaderShield™, HiTherm™, Graf-X™, and Graf-M™ are trademarks of NeoGraf Solutions, LLC. These trademarks are not a comprehensive listing of all NeoGraf products or trademarks used or owned by NeoGraf Solutions, LLC. eGraf®, NeoNxGen®, SpreaderShield™, HiTherm™, Graf+®, Graf-X™, Graf-M™, GrafGuard®, GraFoil®, and GrafCell® products, materials, and processes are protected by several U.S. and foreign patents. For patent information, visit [www.neograf.com](http://www.neograf.com).