

SPREADERSHIELD™ Heat Spreaders

Technical Data Sheet 321

Product Overview

eGRAF® SPREADERSHIELD™ flexible graphite products function as both a passive heat spreader and heat shield. These products offer a variety of in-plane thermal conductivity solutions. The flexible graphite materials can be die-cut, press-formed, or laminated with plastics and/or adhesives.

Part Designation

Every eGRAF® SPREADERSHIELD™ flexible graphite heat spreader part number defines the grade and coating options of the material. It is constructed based on the following example. [For additional coating information, please reference Technical Data Sheet 322 - SPREADERSHIELD™ Design Options.](#)

Graphite Heat Spreader		Plastic/Adhesive Coatings			Envelope Seal
SS400	—	0.25	—	P1 G P1A1	— EN
Product Grade		Graphite Layer Thickness in mm (excludes coatings)		Top Coating Type (if any) G (graphite) Bottom Coating Type (if any)	Envelope Seal Designation (if used)

Product Grade Characteristics^[1]: Natural Graphite Products

Characteristic	SS300	SS350	SS400	SS500	SS600
Typical Thermal Conductivity ^[2] In-Plane • Through-Plane (W/m-K)	300 • 4.5	350 • 4.1	400 • 3.7	500 • 2.8	600 • 3.5
Available Thickness Range (mm)	0.94 ↕ 0.51	0.94 ↕ 0.127	0.94 ↕ 0.040	0.76 ↕ 0.076	0.127 0.102
Standard Thickness (mm) • Standard Roll Width (mm) <i>Width of graphite material only, finished roll width will slightly decrease with coating and adhesive options</i>	0.94 • 610 0.51 • 1000	0.94 • 610 0.48 • 610 0.20 • 610	0.94 • 610 0.51 • 584 0.25 • 584 0.20 • 610 0.127 • 610 0.076 • 559 0.051 • 355 0.040 • 355	0.76 • 305 0.40 • 508 0.20 • 457 0.127 • 440 0.076 • 400	0.127 • 182 0.102 • 182
Thermal Contact Impedance Per Side (°C cm²/W) @ specified thickness (mm)	0.30 @ 0.51	0.34 @ 0.51	0.38 @ 0.51	0.90 @ 0.102	0.44 @ 0.102
Tensile Strength (MPa)	-	-	9.7	7.7	9.7
Electrical Resistivity In-Plane (μΩm)	6.5	5.8	5.2	4.2	3.4
Electrical Conductivity In-Plane • Through-Plane (S/cm)	1,600 • 28	1750 • 23	1,900 • 18	2,400 • 15	2,900 • 10

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Product Grade Characteristics^[1]: Natural Graphite Products

Characteristic	SS300	SS350	SS400	SS500	SS600
Coefficient of Thermal Expansion (ppm/°C) In-Plane • Through-Plane	-0.4 • 27.0				
UL Flammability Rating	94V-0				
Operating Temperature (°C)	-40 to +400				
Specific Heat ^[2] (J/gC) @ 25°C	0.77				
RoHS Compliant	Yes				
Lead / Halogen Free	Yes				

Product Grade Characteristics^[1]: Synthetic Graphite Products

Characteristic	SS1500 -0.017	SS1500 -0.025	SS1700 -0.040	SS1700 -0.050
Thicknesses (mm)	0.017 ±0.003	0.025 ±0.005	0.040 ±0.005	0.050 ±0.005
Sheet Size (Width x Length (mm))	248 x 390	248 x 390	248 x 390	248 x 390
Typical Thermal Conductivity ^[3] (W/m-K) In-Plane • Through-Plane	1800 • 3.4	1600 • 3.4	1700 • 3.4	1700 • 3.4
Thermal Contact Impedance, per side (°C cm²/W) at 100kPa/14.5 psi/1 bar @ 0.025 mm	0.1			
Tensile Strength (MPa) @ 0.025 mm	37			
Electrical Resistivity In-Plane (μΩm) @ 0.025 mm	0.5			
Electrical Conductivity (S/cm) In-Plane • Through-Plane	19,000 • 5			
Coefficient of Thermal Expansion (ppm/°C) In-Plane • Through-Plane	-0.4 • 27			
UL Flammability Rating	94V-0			
Operating Temperature (°C)	-40 to +410			
Specific Heat ^[2] (J/gC) @ 25°C	0.87			
RoHS Compliant	Yes			
Lead / Halogen Free	Yes			

Notes:

[1] Properties listed are typical and cannot be used as acceptance or rejection criteria. Product characteristics exclude coatings and adhesives.

[2] Quasi-Isothermal Modulated Differential Scanning Calorimetry Method.

[3] In-plane conductivity at ambient temperature determined using Angstrom's method; through-plane determined using ASTM D5470 Modified method.

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Learn more about **eGRAF®** products and download our latest technical data sheets:

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2.19.2016