



TIR600-10 series High Performance Electric & Thermal Conductive Interface Material

Made from natural graphite, TIR600-10 series thermal interface materials are designed for use in applications requiring low contact resistance and high thermal conductivity. TIR600-10 series material is offered in a variety of through thickness thermal conductivities, available in roll or die-cut form and laminated with plastics and adhesives.

An economical thermal interface material. TIR600-10 series products will not dry out and no outgassing occurs under vacuum conditions. The conformability of TIR600-10 series materials optimizes thermal properties and ensures excellent contact is maintained for the life of the assembly.

Product Identification		Typical Applications Include:	
For example: TIR620-10-A1			
TIR	6	20	- 10 - A1
↓	↓	↓	↓
Market	Product Number	Thickness: 03-0.0035" 05-0.005" 10-0.010" 20-0.020"	Thermal Conductivity 10 - 10.0W/m-K
		Adhesive: A1-Adhesive on one side A2-Adhesive on two side P1-Plastic on one side	
		<ul style="list-style-type: none"> - Thermal interfaces - Chip burn-in - Chip testing fixtures - DC-to-DC converters - CPU modules - Microprocessors - Hot and Cold plates 	

Grade Dimension and Coating Options				
Product Name	TIR600 -10 series			
Grade	TIR603-10	TIR605-10	TIR610-10	TIR620-10
Thickness(in/mm)	0.0035" (0.089mm)	0.005" (0.127mm)	0.010" (0.254mm)	0.020" (0.508mm)
Thickness Tolerance	+/- 10%	+/- 10%	+/- 5%	+/- 5%
Material	Natural Graphite			
Typical Thermal Conductivity (Through Thickness) ²	10.0W/m-K			
Typical Thermal Conductivity (In-Plane) ³	150W/m-K			
Tensile Strength(ASTM F-152)	270psi (1800kpa)	270psi (1800kpa)	470psi (3200kpa)	470psi (3200kpa)
Thermal Resistance (in ² °C/W) @100psi	0.012 in ² °C/W	0.016 in ² °C/W	0.042 in ² °C/W	0.087 in ² °C/W
Length	No Maximum			
Coatings				
Plain(No Coatings)	Yes			
A1 (Adhesive on one side)	Yes			
A2 (Adhesive on two side)	Yes			
P1 (Plastic on one side)	Yes			
A1P1(Adhesive on one side, Plastic on one side)	Yes			
ES(Edge-Seal)	No			
1.Properties listed are typical and cannot be used as accept/reject specifications. 2.Angstrom's Method 3.ASTM D5470 Modified(at 110kPa/16pai/1.1bar)				



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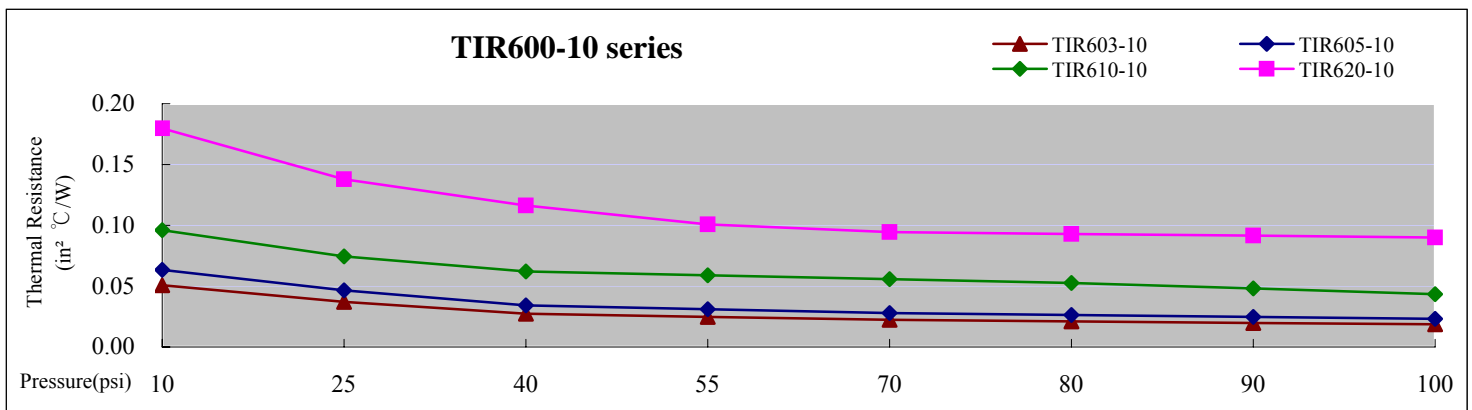
Typical⁴ Properties

What are the performance characteristics of TIR600-10 series thermal interface materials?

TIR600 Series Natural Graphite:

- ❖ Thickness Tolerance +/- 5%(0.010"thick material,+/- 10%(0.005" thick material)
- ❖ Operating Temperature:-40 to 400°C
- ❖ Coefficient of Thermal Expansion(In-Plane):-0.4 x10⁻⁶ m/m °C
- ❖ Coefficient of Thermal Expansion(Through Thickness): 27.0 x10⁻⁶ m/m °C
- ❖ Specific Heat: 711 J/kg °C
- ❖ Electrical Resistivity(In-Plane)⁵: 10μΩm
- ❖ Electrical Resistivity(Through Thickness):1500μΩm

Thermal Resistance v.Interface Pressure



4. Properties Listed are typical and cannot be used as accept/reject specifications

5. ASTM C611.4-Point Resistivity Test

6. ASTM D5470 Modified(at 110kPa/16psi/1.1bar),The total contact resistance of the coating replaces that of the natural graphite.

7. Adhesive Strength is based on a lap shear test (ASTM D3163) with material adhering to a glass plate.Note that the speed of peel from the release paper is directly related to adhesive strength. The higher the adhesive strength, the slower the peel speed from the release paper.



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