

# High Conductivity TMP-FX Laminate

For High Power and Mobile Electronics



## Description

Momentive Performance Materials Inc. offers a unique heat conducting laminate product that contains a TPG\* core (>1500 W/m-K) and either a metal or carbon fiber coating for advanced thermal management applications. TMP-FX laminate is an excellent thermal management product to consider for use as:

- Heat spreader
- Thermal strap
- Heat sink fins

## Key Features

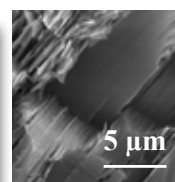
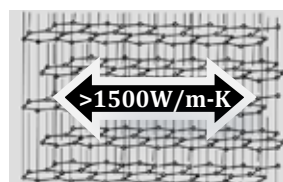
The heat conductive and flexible (TMP-FX) laminate provides:

- High thermal conductivity
- Fast thermal response
- Low profile
- Light weight
- Flexibility
- Formability
- Durability
- Solderability

## Potential Applications

- Power electronic packaging
- RF & microwave packaging
- High power LED
- Lighting
- Mobile devices

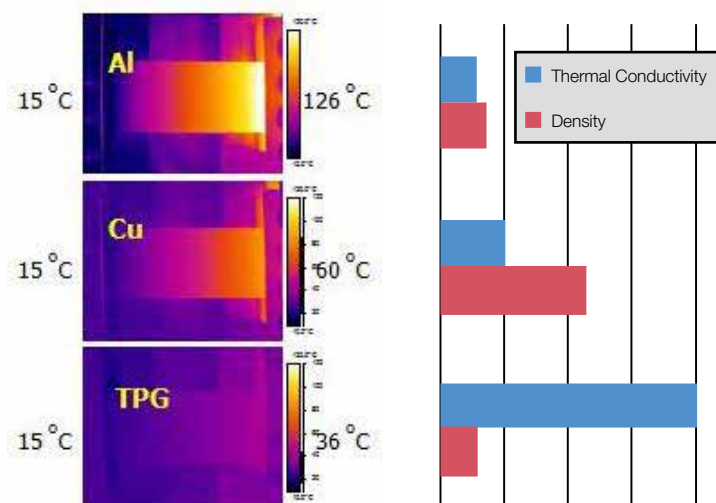
## Illustration and Microscopic Image of Highly-Oriented Graphene Layers



## TMP-FX Laminate Examples



## Comparison of Thermal Conductivity and Density



## Typical Product Properties

TMP-FX Coating Material <sup>(1)</sup>	Coating Thickness Inch (mm)	Laminate Thermal Conductivity <sup>(2)</sup> (W/m-K)	Surface Finish (Ra) μin (μm)	Dimension Tolerance Inch (mm)		Operating Temperature (°C)
				x-y	z	
TMP-FX (Aluminum)	0.004 (0.1)	>1200	24 (0.6)	±0.005 (±0.13)	±0.002 (±0.05)	-55 to +125
TMP-FX (Copper)	0.004 (0.1)	>1250	24 (0.6)	±0.005 (±0.13)	±0.002 (±0.05)	-55 to +125
TMP-FX (Tin)	0.002 (0.05)	>1350	135 (3.0)	±0.005 (±0.13)	±0.002 (±0.05)	-65 to +150
TMP-FX (Carbon Fiber)	0.008 (0.2)	>1050	36 (0.9)	±0.005 (±0.13)	±0.002 (±0.05)	-55 to +125

(1) Custom coating thickness and options of adding vias and edge seal are available upon request.  
 (2) Typical specifications based on panel thickness of 0.040" (1mm) or larger.

Note: Typical properties are average data and are not to be used as or to develop specifications.

\*TPG is a trademark of Momentive Performance Materials Inc.

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### Patent Status

Nothing contained herein shall be construed to imply the nonexistence of any relevant patents or to constitute the permission, inducement or recommendation to practice any invention covered by any patent, without authority from the owner of the patent.

### Product Safety, Handling and Storage

Customers should review the latest Material Safety Data Sheet (MSDS) and label for product safety information, safe handling instructions, personal protective equipment if necessary, emergency service contact information, and any special storage conditions required for safety. Momentive Performance Materials (MPM) maintains an around-the-clock emergency service for its products. MSDS are available at [www.momentive.com](http://www.momentive.com) or, upon request, from any MPM representative. For product storage and handling procedures to maintain the product quality within our stated specifications, please review Certificates of Analysis, which are available in the Order Center. Use of other materials in conjunction with MPM products (for example, primers) may require additional precautions. Please review and follow the safety information provided by the manufacturer of such other materials.

### Limitations

Customers must evaluate Momentive Performance Materials products and make their own determination as to fitness of use in their particular applications.

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