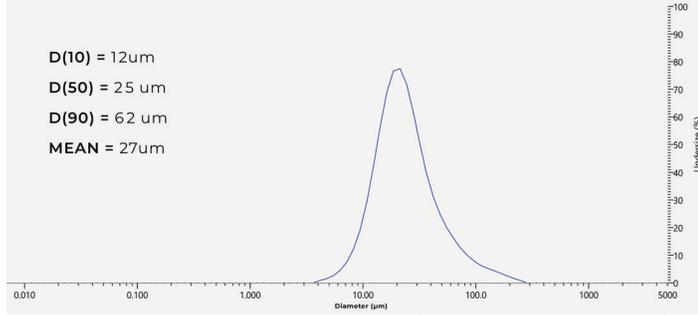




# MITO® **E-GO**™ | The World's Only Hybrid Graphene

## PARTICLE SIZE



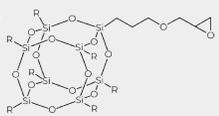
## INTEGRATION

**E-GO™ is designed to be a highly versatile material that integrates into current processes:**

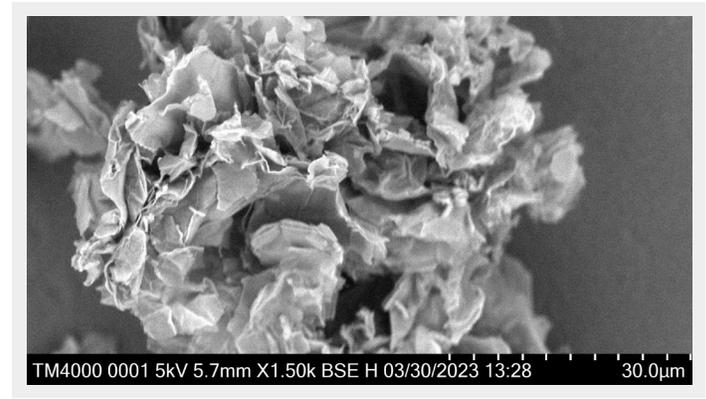
- Powder + Shear Mix
- Powder + Compound
- Spray Applications
- Masterbatched into Your Resin
- Through Your Resin Distributor

## PRODUCT DATA & PHYSICAL PROPERTIES

<b>Physical Form:</b>	Powder
<b>Density:</b>	0.03 - 0.08 g/cm <sup>3</sup>
<b>Appearance:</b>	Black
<b>Polymer Sites:</b>	Oxirane Epoxy
<b>Loading Ranges:</b>	0.05% - 1.5% wt of polymer
<b>Carbon Content:</b>	48 - 55%
<b>Oxygen Content:</b>	28 - 33%



## SEM MAGNIFICATION



## COLLABORATION

**EXPLORE**  
 We want to work with you and know your story. MITO® partners with a variety of industries interested in enhancing material performance. In order for us to help, we need to understand your current materials, processes, and goals so we can recommend the best MITO® solution for your needs.

**EVALUATE**  
 Once we establish the benchmarks in your polymer system, MITO® can create samples and deliver a custom data set showing a direct comparison. If preferred, our team can also work directly with your team at your facility.

**COLLABORATE**  
 MITO® solutions are designed to integrate into the base polymer – before part production – and can be distributed commercially via direct sales or by distributing through your polymer supplier/compounder. This ensures seamless integration into your supply chain without added time or process interruption.

# ENABLE THE NEXT MATERIAL EVOLUTION WITH MITO INSIDE™



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 VP OF SALES  
 (855) 344-6486  
 TOM@MITOMATERIALS.COM





# E-GO™ in Epoxy + Carbon Fiber Systems

MITO® Material Solutions' flagship product, E-GO, has been designed with versatility, realistic solutions, and accessibility in mind. E-GO is a hybridized graphene oxide/POSS additive which reactively disperses while resisting agglomeration -- unlocking the properties of graphene for various industries by both utilizing thermoset and thermoplastic polymer composites. With a MITO Powered™ epoxy + carbon fiber composite, you can create a stronger, lighter component that transfers less vibrations and less noise to the user.

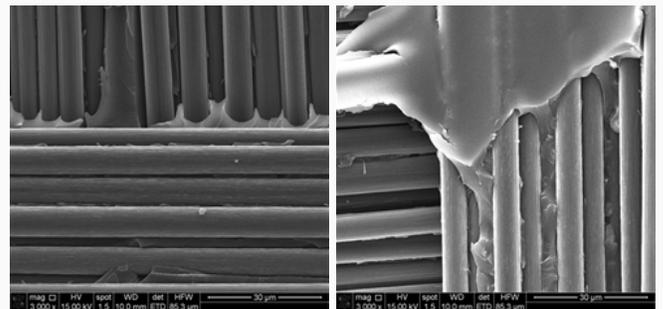
## DISPERSION & INTEGRATION

**E-GO has been designed to seamlessly integrate into your manufacturing method:**

- Shear mixing
- Three roll milling
- Spray applications

Simply measure and mix as normal **at loadings as low as 0.1%** by weight of resin.

## SEM 5000X MAG | FIBER-MATRIX ADHESION



Within a carbon fiber pre-preg system:  
Control (left), Same with 0.1%wt E-GO (right)

## COLLABORATION

### EXPLORE

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### EVALUATE

Once we establish the benchmarks in your polymer system, MITO can create samples and deliver a custom data set showing a direct comparison. If preferred, our team can also work directly with your team at your facility.

### COLLABORATE

MITO solutions are designed to integrate into the base polymer – before part production – and can be distributed commercially via direct sales or by distributing through your polymer supplier/compounder. This ensures seamless integration into your supply chain without added time or process interruption.

## MAKE YOUR COMPOSITES TOUGHER AND LIGHTER THAN EVER BEFORE



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TESTING METHOD	PROPERTY	UNITS	CONTROL	0.1%wt E-GO	% DIFFERENCE
<b>TENSILE</b>	Maximum force withstood	kN	-	-	-
	Modulus at break	MPa	-	-	-
	Strain at break	%	-	-	-
<b>FLEXURAL</b> <sup>1</sup> ASTM D790	Maximum force withstood	kN	0.55	0.68	21%
	Modulus at break	MPa	59356	63955	7%
	Strain at break	%	1.46	1.86	26%
<b>COMPRESSION</b>	Maximum force withstood	kN	-	-	-
	Modulus at break	MPa	-	-	-
	Strain at break	%	-	-	-
<b>IMPACT</b>	Izod impact resistance	J / m	-	-	-
<b>FRACTURE TOUGHNESS</b> <sup>2</sup> ASTM D3433	G <sub>1c</sub>	kJ / m <sup>2</sup>	0.72	1.25	54%
<b>DYNAMIC MECHANICAL</b> <sup>1</sup> ASTM D7028	Storage modulus	MPa	10000	9473	-5%
	Viscous modulus	MPa	-	-	-
	Dampening coefficient		-	-	-
<b>GLASS TRANSITION</b> <sup>1</sup>	T <sub>G</sub>	°C	96	96	0%
<b>ELECTRICAL RESISTIVITY</b> <sup>1</sup> ASTM D257	Resistivity through plane	Ohm · m	0.43	1.36	104%
	Resistivity in plane	Ohm · m	3.20E-04	2.33E-03	152%

*\*All tests were conducted according to ASTM standards.*

*<sup>1</sup>Samples: 2x2 twill carbon fiber, BPA epoxy, post cured 100 °C for 2 hrs, 50% RH +/-5%*

*<sup>2</sup>Samples: TCR UF3352 Pre-preg carbon fiber, cured via hot press according to product specification*

**Not seeing a property you need?** Contact MITO with any inquiries and our highly trained team will work with you and your engineers to design a study with your specific material requirements in mind.



# E-GO™ in Polypropylene

MITO® Material Solutions' flagship product, E-GO, has been designed with versatility, realistic solutions, and accessibility in mind. E-GO is a hybridized graphene oxide/POSS additive which reactively disperses while resisting agglomeration -- unlocking the properties of graphene for various industries by utilizing both thermoset and thermoplastic polymer composites. With a MITO Powered™ polypropylene, you can create an engineered plastic with a higher amount of recycled content that outperforms competitors.

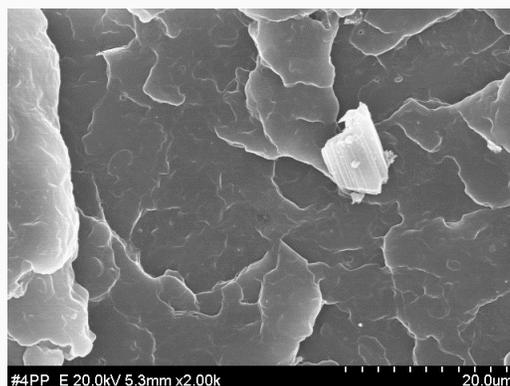
## DISPERSION & INTEGRATION

**E-GO has been designed to seamlessly integrate into your manufacturing method - from beginning to end - without introducing processing difficulties.**

- Compounding
- Injection molding
- Blow molding
- SLA/FDM

Simply measure and mix as normal **at loadings as low as 0.1%** by weight of polymer.

## SEM 2000X MAG | E-GO PARTICLE WITHIN PP



## COLLABORATION

### **EXPLORE**

We want to work with you and know your story. MITO partners with a variety of industries interested in enhancing material performance. In order for us to help, we need to understand your current materials, processes, and goals so we can recommend the best MITO solution for your needs.

### **EVALUATE**

Once we establish the benchmarks in your polymer system, MITO can create samples and deliver a custom data set showing a direct comparison. If preferred, our team can also work directly with your team at your facility.

### **COLLABORATE**

MITO solutions are designed to integrate into the base polymer – before part production – and can be distributed commercially via direct sales or by distributing through your polymer supplier/compounder. This ensures seamless integration into your supply chain without added time or process interruption.

## OUTPERFORM YOUR COMPETITORS WITH THE NEXT GENERATION MATERIALS



**TOM SCHREPFERMAN**

VP OF SALES

(855) 344-6486

TOM @ MITOMATERIALS.COM





TESTING METHOD	PROPERTY	UNITS	NEAT	0.1%wt E-GO	% DIFFERENCE
<b>TENSILE</b> ASTM D638	Maximum force withstood	kN	21.60	30.90	35%
	Modulus at break	MPa	1470	1680	13%
	Strain at break	%	27.89	5.18	-137%
<b>FLEXURAL</b> ASTM D790	Maximum force withstood	kN	0.06	0.07	15%
	Modulus at break	MPa	1095	1183	8%
	Strain at break	%	2.18	2.25	3%
<b>COMPRESSION</b>	Maximum force withstood	kN	-	-	-
	Modulus at break	MPa	-	-	-
	Strain at break	%	-	-	-
<b>IMPACT</b>	Izod impact resistance	J / m	-	-	-
<b>FRACTURE TOUGHNESS</b>	G <sub>IC</sub>	kJ / m <sup>2</sup>	-	-	-
<b>DYNAMIC MECHANICAL</b> ASTM D7028	Storage modulus	MPa	2420	2520	4%
	Viscous modulus	MPa	-	-	-
	Dampening coefficient		-	-	-
<b>GLASS TRANSITION TEMP</b>	T <sub>G</sub>	°C	15.81	16.67	5%
<b>ELECTRICAL RESISTIVITY</b> ASTM D257	Resistivity through plane	Ohm · m	1.80E+14	2.00E+11	-200%
	Resistivity in plane	Ohm · m	-	-	-

*\* All tests were conducted according to ASTM standards.*

*\*\*Samples: SABIC 595a via injection molding*

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# E-GO™ in Polyester+Glass Fiber Systems

MITO® Material Solutions' flagship product, E-GO, has been designed with versatility, realistic solutions, and accessibility in mind. E-GO is a hybridized graphene oxide/POSS additive which reactively disperses while resisting agglomeration -- unlocking the properties of graphene for various industries by utilizing both thermoset and thermoplastic polymer composites. Using a MITO Powered™ polyester system, you can replace harder to handle vinyl ester to create high performing, low cost composites to enable the next generation of materials.

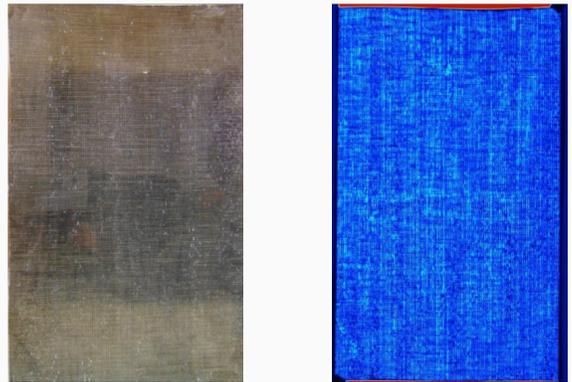
## DISPERSION & INTEGRATION

**E-GO has been designed to seamlessly integrate into your manufacturing method:**

- Shear mixing
- Three roll milling
- Spray applications

Simply measure and mix as normal **at loadings as low as 0.1%** by weight of resin.

## ULTRASONIC DENSITY CHECK: 0.1%WT E-GO



LEFT: IMAGE OF PANEL

RIGHT: ULTRASONIC CHECK OF SAME

## COLLABORATION

### **EXPLORE**

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### **EVALUATE**

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### **COLLABORATE**

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## CREATE CUTTING EDGE, EASY-TO-USE MATERIALS WITH E-GO



**TOM SCHREPFERMAN**

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TESTING METHOD	PROPERTY	UNITS	CONTROL	0.1%wt E-GO	% DIFFERENCE
<b>TENSILE</b> ASTM D3039	Maximum force withstood	kN	234.42	314.40	29%
	Modulus at break	MPa	19650	21650	10%
	Strain at break	%	-	-	-
<b>FLEXURAL</b> ASTM D790	Maximum force withstood	kN	0.17	0.21	21%
	Modulus at break	MPa	21959	34743	45%
	Strain at break	%	0.5	0.4	-22%
<b>COMPRESSION</b> ASTM D6641	Maximum force withstood	kN	195.81	162.72	-18%
	Modulus at break	MPa	24821	22753	-9%
	Strain at break	%	0.85	0.77	-9%
<b>IMPACT</b> ASTM D256	Izod impact resistance	J / m	1126	1004	-12%
<b>FRACTURE TOUGHNESS</b>	G <sub>IC</sub>	kJ / m <sup>2</sup>	-	-	-
<b>DYNAMIC MECHANICAL</b> ASTM D7028	Storage modulus	MPa	1556	2026	26%
	Viscous modulus	MPa	-	-	-
	Dampening coefficient		0.76	0.72	-5%
<b>GLASS TRANSITION TEMP</b> ASTM D7028	T <sub>G</sub>	°C	93	105	12%
<b>ELECTRICAL RESISTIVITY</b>	Resistivity through plane	Ohm · m	-	-	-
	Resistivity in plane	Ohm · m	-	-	-

\* All tests were conducted according to ASTM standards.

\*\*Samples: DCPD polyester, 1.5% MEKP, 2x2 Twill FG made via hand layup

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