HYDROGRAPH

IGNITING MATERIAL CHANGE

FRACTAL GRAPHENE™
IN THERMOSETS

Material OVERVIEW

Fractal graphene transforms thermoset resin systems by providing exceptional mechanical reinforcement. Our pristine fractal graphene powder has been demonstrated to deliver strength, stiffness, and toughness enhancement simultaneously, all achieved with incredibly low fractal graphene concentrations. The substantial property improvements provided by HydroGraph's graphene in thermoset resins enables thinner and lighter components, more durable and longer lasting parts, and more environmentally sustainable outcomes. These performance characteristics are ideally suited for a wide range of resins across many demanding industrial applications.

Resin Systems

Applicable for a wide range of thermoset resins, including Epoxy resins, Polyurethane resins, Vinyl Ester resins, and specialty resins

Applications & Uses

Structural Composites (CFRP)

- Automotive components
- Aerospace components
- Wind turbine blades
- Tooling boards

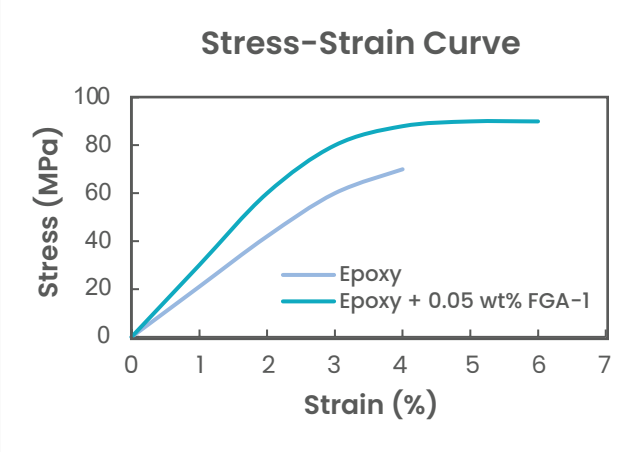
Coatings and Adhesives

- Industrial coatings
- Floor coatings
- Marine coatings
- Infrastructure repair adhesives

Loading Efficiency

Only **0.05%** fractal graphene delivers a significant mechanical boost—comparable performance with conventional graphene nanoplatelets requires **5%** loading.

Fractal Graphene Enhancement



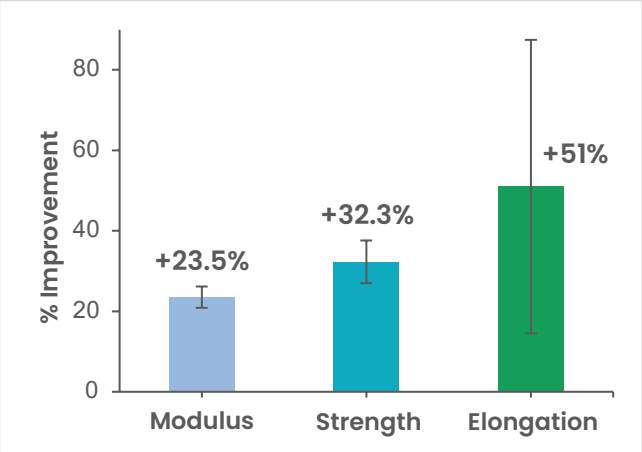


Chart: Simultaneous increases in stiffness, strength, and toughness at low % loadings of FGA-1 (Fractal Graphene Aggregate) in Epoxy Resin

CONTACT US:
Ph: +1-785-380-4205
Email: info@hydrograph.com

GET CONNECT:
www.hydrograph.com
x.com/HydroGraphInc
ca.linkedin.com/company/hydrograph

HEAD OFFICE:
1199 W Hastings St #1100
Vancouver, BC V6E 3T5
Canada

HydroGraph Products

Fractal Graphene

Pristine turbostratic graphene of unsurpassed purity, identical batch-to-batch consistency and lowest environmental footprint.

- Pristine carbon structure (100% sp^2 hybridized)
- 99.8% carbon, 0.2% oxygen with no PAHs
- Thickness: 2-3 nm (average 6 graphene layers)
- Lateral dimensions: 20-50 nm
- Bulk mass density: 70-100 mg/cc
- BET specific surface area: 200 m^2/g
- Composed of fractal aggregates of monomers (primary particles)
- Very dark, black, hydrophobic powder

Reactive Graphene

Functionalized turbostratic graphene featuring precise functional chemistry, identical batch-to-batch consistency and the lowest environmental footprint.

- Surface decorated with carboxylic acid (-COOH) functional groups
- 96.3% carbon, 2.1% oxygen, 1.6% hydrogen, no PAHs
- Thickness: 2-3 nm (average 6 graphene layers)
- Lateral dimensions: 10-50 nm
- BET specific surface area: 165 m^2/g
- Composed of fractal aggregates of monomers (primary particles)
- Dark, black, hydrophilic powder

HydroGraph Advantage

Superior Quality

Highest purity graphene material in the market, exceptional particle size uniformity, identical batch-to-batch consistency, for unbeatable quality and reliability.

Ultra-low Addition Rates

Achieves exceptional performance at concentrations 10-100x lower than conventional graphene nanoplatelets, fundamentally transforming the economics for graphene technology.

Sustainable Advantage

Improves resource efficiency, reduces GHG emissions, inherently lowest energy footprint and carbon footprint graphene available.

The Fractal Future

The fractal structure—unique to HydroGraph's graphene—provides performance advantages that cannot be replicated by conventional graphenes. As industries increasingly seek sustainability by doing more with less, Fractal Graphene™ stands ready to transform the way products are formulated and manufactured.

Contact HydroGraph today to learn how Fractal Graphene™ can enhance your products and processes.

CONTACT US:
Ph: +1-785-380-4205
Email: info@hydrograph.com

GET CONNECT:
www.hydrograph.com
x.com/HydroGraphInc
ca.linkedin.com/company/hydrograph

HEAD OFFICE:
1199 W Hastings St #1100
Vancouver, BC V6E 3T5
Canada