

SPECIALLY ENGINEERED FUNCTIONAL ADDITIVE FOR BIOPOLYMER REINFORCEMENT

EMforce® Bio additive

EMforce® Bio additive is a specially engineered, high aspect ratio, calcium based synthetic mineral product designed to provide a unique balance of excellent impact toughness and high flexural modulus (stiffness) for biopolymers. EMforce® additive provides a simple, cost effective method for greatly improving the impact resistance of biopolymers while maintaining stiffness and compostability.

KEY BENEFITS

- Change Polymer Failure Mode from Brittle to 100% Ductile State
- Greatly Improve Impact Strength
- Achieve Higher Color of Composites
- Maintain Full Compostability
- Extension of Resin Property Envelope
- Non-Silica based

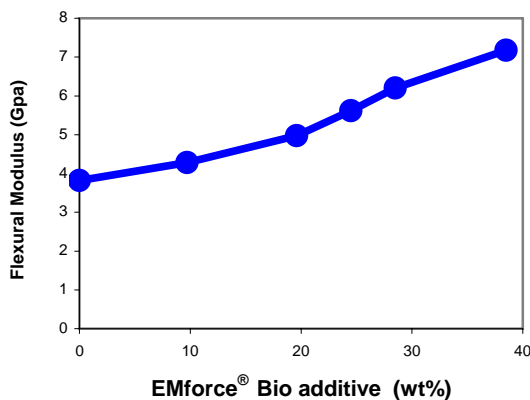
Typical Properties

Average Major axis (microns)	1.08
Average Minor axis	0.25
Aspect ratio	5.42
Specific Gravity	2.7
Dry Brightness (Hunter Y, Rd value)	94 min.
Surface Area (meters ² /gram)	10

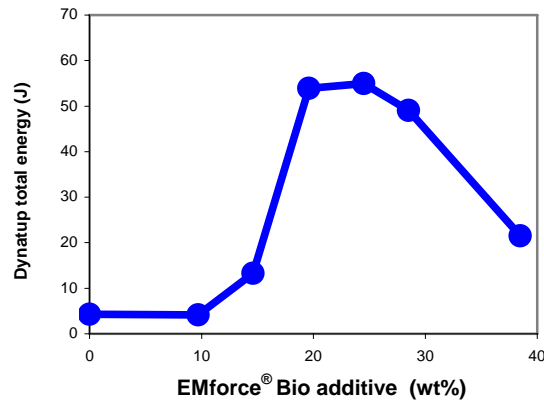
Chemical Composition (wt%)

Calcium Carbonate	Ca	> 33
Iron as	Fe ₂ O ₃	< 0.1
Moisture wt%max. (% weight loss @ 110° C)	H ₂ O	< 0.2

Flexural Modulus of Poly (Lactic Acid) Using EMforce® Bio



Room Temperature Impact Energy of Poly (Lactic Acid) Using EMforce® Bio



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