

# Sustainability

## FARREL POMINI® Bioplastics Compounding

### Wood Pulp Compounding with PLA and PHA

#### Advantages of wood pulp additive:

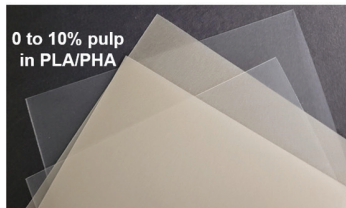
- Cost competitive
- Readily compostable
- Available in food packaging grades
- When combined with biopolymers, wood pulp is a 100% biobased and biodegradable compound

#### Processing challenges:

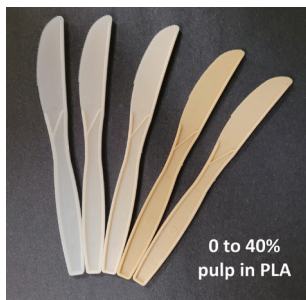
- Temperature sensitive
- Shear sensitive
- Moisture presence
- Requires high dispersion

Processing with the FCM™, Farrel Continuous Mixer, it was possible to develop compounds of wood pulp with PLA or PHA and produce at an industrial scale. The final compound ranges show:

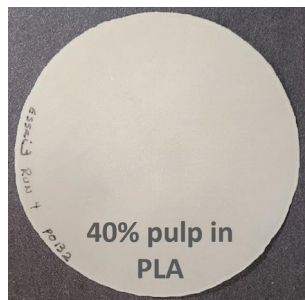
- High dispersion quality
- Moisture content of .05% in the final compound from a starting moisture of 4%
- Fill levels of up to 40% wood pulp were achieved
- Increased crystallinity
- Excellent mechanical properties



Commercial Scale, Extrusion & Thermoforming



Injection Molding



Compound Production

#### Features of FCM™ technology that contributed to these positive results include:

- Adjustable mixing intensity achieved by changing rotor speed and orifice position for a compound that is well-dispersed and retains its mechanical structure.
- Excellent temperature control throughout the mixing chamber, rotors, and extruder barrel allows the material to process within its ideal temperature range.
- The standard 6 L/D rotor provides a short residence time, efficient rotor shear, and low heat history for temperature sensitive materials.
- Unique rotor geometry enables shear to be imparted efficiently without over stressing the polymer.
- Energy efficient atmospheric venting removes air, volatiles, and moisture from the mixer.

#### Summary:

- The FCM™, Farrel Continuous Mixer is a versatile compounder and well suited to processing biodegradable resins.
- The FCM™ offers viable commercial-scale production.
- The compound produced is ready for the next level of processing in the value chain.



Research was conducted jointly with FPInnovations, the world's leading non-profit research technology organization for forestry.

LET OUR EFFICIENCY DRIVE  
YOUR SUSTAINABILITY.



For more information, please contact your local Sales Engineer or call +1 203 736.5500 to schedule time in a Customer Demonstration Facility.

# FARREL POMINI

continuous compounding systems

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