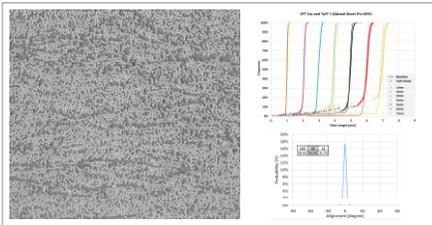


TuFF

TAILORED UNIVERSAL FEEDSTOCK FOR FORMING

SHORT FIBER COMPOSITES WITH METAL-LIKE FORMABILITY & CONTINUOUS FIBER PERFORMANCE

Microstructure



- Alignment: **95%** of short fibers within **5 degrees**
- Up to **63% fiber volume fraction** demonstrated
- Control of fiber length independent of fiber type

Properties



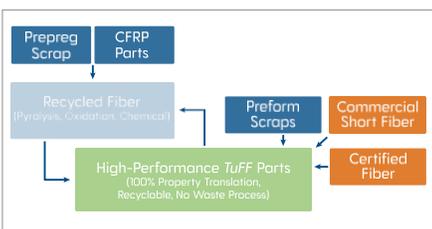
- **~100% translation** compared to continuous fiber
- **Thin-ply** formats available (30 gsm and greater)
- Fiber and polymer **agnostic**

Forming



- **40% bi-axial in-plane** stretch demonstrated
- Dry preforms and consolidated blanks
- Vacuum forming of thermoplastics
- Low pressure and fast cycle times (~1 minute)

Recycling

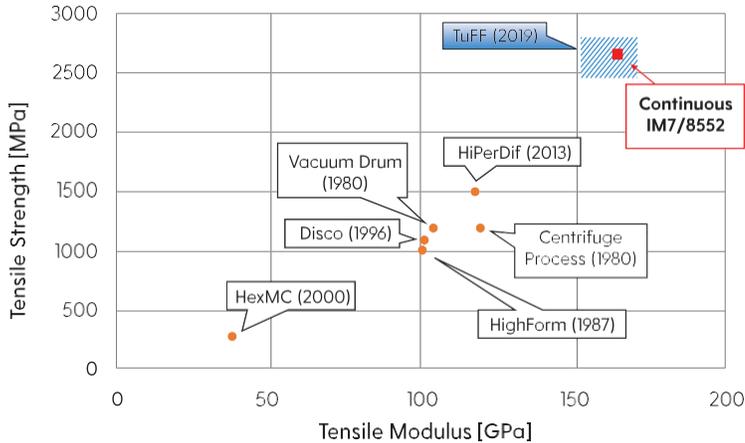


- Closed loop recycling with property retention
- **Zero waste** process possible
- Fiber agnostic (virgin, scrap, recycled fibers)
- Demonstrated **100% modulus translation** with **60% strength retention**





TAILORED UNIVERSAL FEEDSTOCK FOR FORMING



World-Record Short Fiber Properties for High-Performance Applications



250gsm quasi-isotropic [0/90/45/-45]s laminate



Unidirectional 0 (top) and 90 (below) laminates with biaxial forming without splitting



5 Ton Pilot Facility



Continuous TuFF sheet of Highly Aligned Short Fiber

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