

CASE STUDY

PROJECT SIZE: MEDIUM (\$5,000 – \$15,000)

TIMEFRAME: 6 – 8 WEEKS



Assessment of Bioresin Performance for Use in Composites

Client: A start-up resin manufacturer was producing a novel, pre-commercial bio-sourced resin.

Problem: The client was interested in assessing the resin's value in the composite resin marketplace.

Details:

- The resin was made in small lab-scale batches and was costly/time consuming to produce.
- There were many variations of the resin, all with slightly different chemistries.

Recommended Tests & Rationale:

FibreCITY was familiar with the resin requirements for a variety of composite industries and the challenges associated with creating bioresins. FibreCITY first tested small amounts of all of the resin samples and then performed more comprehensive tests on the most promising chemistries to assist with selecting the ones for scaled-up production.

Screening program (8 samples):

- **Viscosity Testing** – determining if the viscosity of the material would be compatible with the manufacturing processes being targeted
- **Differential Scanning Calorimetry** – identifying the glass transition temperature (temperature at which the material will soften) to determine if the material would soften during temperature ranges commonly seen in targeted composites industries

Full evaluation (2 samples):

- **Fabrication** – a resin panel and a composite panel with the two most promising chemistries
- **Baseline Mechanical Tests** – tensile strength, flexural, impact resistance on both resin and composite panels



Outcome

FibreCITY was able to assist the client in selecting the most promising resin for production scale-up. Properties of this resin were found to be highly promising and on the right path to becoming comparable to a standard polyester resin currently used in the composites manufacturing industry.

