

Capabilities

forestconcepts

Biomaterials Design and Development

Innovative products from forest, urban, and agricultural biomass resources



Growing interest in biomaterials, bio-based products and renewable feedstocks underscores a need for designers who have a deep knowledge of plant structural biology and engineering as well as creativity. The staff at Forest Concepts take advantage of the structural biology of trees, grasses, and other plants to create products and materials for our clients.

We apply a process called Appreciative Design to establish material specifications and forms based on functional requirements, stakeholder constraints, and the first principles of biomaterials. We work from the sub-millimeter scale of fiber bundles for absorbents and composite furnish to whole-log scale as used to build roundwood fencing, bioengineering structures, and rustic furniture.

Some bulk processed bio-based materials are optimized for flowability such as our Crumbles® feedstocks, while others are optimized for knitting together into a stable matrix for erosion control such as our WoodStraw® erosion control material and Tangles™ excelsior-like material.

Recent biomaterials development projects have used agave fiber, hemp, switchgrass, corn stover, bagasse and many other herbaceous biomass raw materials. Forest raw materials include logs, chips, veneer, and residues from mills and harvesting operations.

Development starts with characterization of the raw biomass and continues through specification or design of processing methods and ends with functional products, precision feedstocks®, and industrial materials.



Forest Concepts has the capability to evaluate the physical and mechanical properties of raw biomass for suitability to make a new biomaterial. The development lab includes a wide range of tools and processing equipment that enable rapid testing and iteration towards successful technical and process specifications. Whether the end product is a bulk milled and screened material that is dried to a precise moisture content or a solid wood product, the Forest Concepts pilot plant can make quantities from a few units to tens of truckloads.

Working with Forest Concepts

All it takes is a phone call or email to start the development process with Forest Concepts. After the first call, you will be matched with a technical leader who will manage your project. Successful design, specification and prototyping of a new biomaterial begins with a conversation about objectives, needs, and constraints.

Sometimes the next step is disciplined design and deep science. In others, the logical next step is to make a range of materials to help frame the problem and solution by looking at and playing with small piles on a table.

Forest Concepts, LLC
3320 West Valley Hwy. N.
Ste. D-110
Auburn, WA 98001
Ph: 253.333.9663
www.forestconcepts.com