

# Whey-Based Wood Adhesive Offers Environmental Benefits

## Competitive Advantages

- ☑ Wood glue incorporates whey, a sustainable biomass resource.
- ☑ Meets or exceeds strength and durability requirements for structural use
- ☑ Useful for bonding plywood, solid wood, and wood-based composites.
- ☑ Cost should be comparable to traditional structural adhesives.

Although whey is known as a dairy by-product that acts as a pollutant when discharged into waterways, it is also a renewable biomass resource that can add value to manufactured products. This type of use can help protect the environment and human health by keeping whey out of the waste stream.

Whey and other bio-based materials are also growing in commercial popularity due to the high cost and decreasing availability of non-renewable fossil resources.

## Using Whey in Adhesives

A good adhesive must form a continuous layer between surfaces and endure enough stress to prevent separation when the bonded surfaces are subjected to a load.

In their natural state, the proteins in whey are compact, globular structures with low molecular weight. These characteristics result in low bond strength, making whey undesirable for use in adhesives. However, thermal and chemical modifications can overcome the normal limitations of whey by unfolding the globular structures and increasing the molecular weight.

## A Strong, Durable Adhesive

A whey-based wood glue has been developed that compares favorably with

glues traditionally used to bond plywood panels, solid wood, and wood-based composites.

Processing of the whey involves thermal denaturation that unfolds the protein's global structure. Then a chemical agent is added that increases the cross-links between the unfolded whey protein molecules.

Adhesive that includes the modified whey meets or exceeds the requirements for structural use, including shear strength, moisture resistance, and durability. In addition, the cost is expected to be similar to traditional structural glues.

## Commercialization

The whey-based glue can be marketed to wood-product and adhesive manufacturers, and should find particularly strong demand among "green" builders and remodelers.

## Patent/Licensing Status

Patent pending. Exclusive rights available.

## Learn More

Detailed description  
[www.uvminnovations.com/graphics/PDF/whey\\_glue1.pdf](http://www.uvminnovations.com/graphics/PDF/whey_glue1.pdf)

Additional information  
[www.uvminnovations.com/graphics/PDF/whey\\_glue2.pdf](http://www.uvminnovations.com/graphics/PDF/whey_glue2.pdf)

## Primary Investigator

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