

# High Strength Adhesives from Food Components: Zein Protein and Phenolics

**A high-performance, nontoxic, and low-cost adhesive derived from readily available biobased components offers structural bonding strength comparable to commercial Super Glue.**

People are surrounded by and exposed to toxic glues in their daily environment. Such glues keep car parts together, houses and furniture in place, and books and cardboard boxes together. Almost none of these adhesives are approved for medical applications inside the human body. Given the toxicity of such adhesives, there is a need for nontoxic adhesives with bonding strengths as high as structural adhesives such as Super Glue\*.

Researchers at Purdue University have developed a nontoxic adhesive composition derived from a readily available plant protein and phenolics. This technology is substantially free of formaldehyde and has an adhesion strength that is roughly comparable to commercial Super Glue\*. This high performance, nontoxic adhesive uses biobased components that are readily available, resulting in a low-cost adhesive.

## **Advantages:**

- Free of toxins
- High performance
- Low cost

## **Potential Applications:**

- Adhesives
- Food sealers
- Medical glues

\*Trademark

## **Technology ID**

2017-WILK-67873

## **Category**

Chemicals & Advanced  
Materials/Green & Bio-Based  
Chemistry  
Chemicals & Advanced  
Materials/Coatings, Adhesives &  
Sealants  
Materials Science &  
Nanotechnology/Biomedical &  
Bioinspired Materials

## **Authors**

Gudrun Schmidt  
Jonathan James Wilker

## **Further information**

Aaron Taggart  
[adtaggart@prf.org](mailto:adtaggart@prf.org)

## **View online**



TRL: 4

**Intellectual Property:**

Provisional-Patent, 2017-04-12, United States | PCT-Patent, 2018-04-10, WO  
| NATL-Patent, 2019-09-05, United States | CON-Patent, 2023-10-04, United States

**Keywords:** nontoxic adhesive, biobased components, high performance adhesive, plant protein adhesive, phenolic adhesive, low cost adhesive, medical glues, food sealers, structural adhesive, formaldehyde-free