

# Binding perfection

## Attributes define the most sought-after binders

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by Bryan Salvage

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Meat and poultry processors have a wide range of binding ingredients to choose from when formulating new or reformulating existing value-added products. But many insist on using binders that are convenient, user-friendly, offer a clean label product and most importantly – provide extraordinary performance and good binding strength.

“We find the most desirable features of binders revolve around how useful they are and how easily they can be incorporated into their system,” says William Fields, manager of business development and application innovation with Ajinomoto Food Ingredients LLC, who is based in Ames, Iowa. “Having a binder that is easy to use is important, as is having good binding strength and range of product applications. Labeling and allergen status can also play a role, but if the product doesn’t perform well, it really doesn’t matter if it is clean label or not.”

Introduced a few years ago, Ajinomoto’s ACTIVA GS was a breakthrough binding ingredient, allowing processors to have a long application window yet delivering a very strong bond, says Dr. Joseph Formanek, associate director of business development and application innovation, also with Ajinomoto Food Ingredients and based in Chicago. “The active component of ACTIVA GS, as it is for all of our ACTIVA products, is transglutaminase,” he adds. “Transglutaminase crosslinks glutamine and lysine amino acid residues in proteins such as those found in meat products. This reaction can be very quick and, in certain circumstances, can cause issues where the reaction occurs too early in the application process.”

ACTIVA GS contains ingredients that inhibit the bonding reaction until after the material has been applied onto the surfaces to be bonded. All of the ingredients that make up ACTIVA GS are USDA-approved for use in a wide range of meat products.

Benjamin Ruther, associate scientist, Ajinomoto Food Ingredients, Ames, Iowa, says some major issues processors can experience when working with binders include binder incompatibility with existing equipment, microbial control in comminuted products and lack of binder handling knowledge.

“ACTIVA GS works well despite these concerns because it fits well in most production-bonding scenarios and maintains its bond strength even when typical antimicrobial and antioxidant agents are added into the system,” Ruther says. “We also have an expert team at our Ames, Iowa facility that assists our customers with any handling issues that may arise.”

### **Savvy solutions**

Rick Cassidy, vice president of product development with BindMax Proteins, New Berlin, Wis., says features meat and poultry processors look for and questions they might ask about a meat binding agent may include:

- Functionality/ effectiveness – How much water does it bind?
- Compatibility with other ingredients in the meat formula.
- Is it non-allergenic?
- Production efficiency – Will the binder selected require equipment cleanup before the next production batch?
- Features an ingredient name that is label-friendly to consumers.
- Does the ingredient qualify for USDA “natural” and/or “organic”?

- What is the ingredient's cost per lb.?
- How much does the ingredient improve the cook yield?
- How does the ingredient affect the cooked finished price of the meat product compared to other binders?

"In recent years, we have seen an increase in the use of fermented starches and proteins that have higher viscosity and greater water-binding capacity," Cassidy says. "We have also seen the improvement in performance and ease of application in collagen containing meat proteins, stocks and flavors derived from pork, beef, chicken and turkey."

The largest challenge for meat processors in using binders is to select which of the hundreds of binders they should test, since it would be expensive and time consuming to test them all, says Cassidy. "Meat processors should find an ingredient supplier that has a technical person who can walk them through a step-by-step process to help them select the best ingredient, with the right functional characteristics, an acceptable label declaration and at the right price," he adds. "If you can prescreen 500 ingredients down to two to four that are worthwhile testing, it will make their lives a lot easier."

BindMax offers two new meatbinding ingredients. One of them is a phosphate replacer, BindMax PS. "It is a blend of native, non-GMO potato starch and cane sugar that are fermented to form a water binder that is natural and non-allergen," says Cassidy. Applications are for beef, pork, chicken or turkey that is cured or uncured. It also works in emulsified, ground or whole muscle meat applications.

BindMax HVP-GB is a functional, fermented, hydrolyzed soy protein that was specifically designed to bind water, improve cohesion and improve cook yield in ground-beef applications, including beef patties, meatballs, taco meat and pizza toppings.

### **Meeting expectations**

Meat processors seem to be looking for clean label, versatile binders that do not contribute a significant amount of sodium, says Mark Purpura, technical service manager with Advanced Food Systems Inc., Somerset, N.J. "Some processors are looking for phosphate-free binding systems," he adds. "It seems processors are looking for a binding system that is highly effective [one that provides high cook yield without compromising texture and flavor] and versatile enough to be used in several applications." T

There are many starches, proteins and carrageenans available for processors.

One major challenge for meat processors is selecting the right binding ingredient for the product. "When we develop a binding system, we work closely with our customers and carefully develop a system that provides the texture and taste they desire in their end product, that meets their label requirements and works effectively and efficiently in their equipment," he says.

One of AFS' newest technologies is its clean label Actobind products. They can be used in beef, pork and poultry and are made up of native starches and other label ingredients (proteins, carrageenans or blends of all).

"They provide high cook yield, natural texture and excellent flavor release," Purpura says. "There are several different Actobinds to choose from; product selection is based on the desired end texture, method of application and ingredient restrictions of the customer. They are all designed to be used without phosphates and still provide high yield and water-holding capacity."

The clean label Actobinds are also versatile. Processors are able to use the same product in various products (chicken, beef, pork) and applications (tumble or injection).

### **The future**

Ajinomoto Food Ingredients' Formanek predicts continued research into the development of value-added fresh and processed meat and poultry products. "Of course, raw material prices will drive much of this, but the ability to be creative and make unique products and forms will also play an important role in the development of products that allow processors to differentiate themselves from others in the marketplace," he adds. "These processors will require new ingredients to allow them to successfully manufacture these new and novel products. We feel that our ACTIVA product line can be an important tool in that ingredient arsenal."

"In the future, I expect ingredient suppliers to produce higher-functionality, cleaner-flavor and more label-friendly choices of meat binders to meet the demands of today's consumers," BindMax's Cassidy concludes.