SimPure™

Simple ingredients. Pure functionality.™

Simple starches solve complex challenges

Label-friendly starch replaces modified starch in frozen-ready meals

Cargill® Helping the world *thrive*

For today's label-conscious consumer, simple recipes and recognizable ingredients are no longer enough. Increasingly, consumers want to know how those ingredients were produced. It's a movement that has sparked a return to familiar ingredients, including basic starches.

"Consumers know and trust simple ingredients like corn starch – it's something they likely have in their own kitchen cabinet," explains Kailee Petersen, Cargill's product line manager for starch. While corn starch's appeal has never been higher, other ingredients, including modified starches, are receiving more attention.

For years, modified starches served as the workhorses of the starch world. Affordable, reliable and highly functional, they were designed to stand up to the rigors of modern food processing. But faced with growing consumer demand for label-friendly ingredients, Cargill researchers from around the globe set out to find new approaches to address customers' evolving needs.

Back to Basics

They started by evaluating the company's existing portfolio of native starches derived from a variety of botanical sources.

"We went back to the basics, studying and quantifying all of the attributes of each individual starch," explains Michelle Kozora, technical services manager for Cargill's texturizing business. "By gaining a greater understanding of the structure and unique properties of each starch, we began to unlock their collective potential."

At the same time, interest in modified starch alternatives was growing. In particular, frozen-ready meal customers were looking for label-friendly texturizing solutions that could withstand multiple freeze-thaw cycles.

"Freeze-thaw cycles are the Achilles' heel of native starches," Kozora explains. "As they are frozen, thawed and refrozen – often multiple times during a product's shelf life – native starches tend to break down and release water. They get weepy and transform a thick, creamy sauce into a gloppy mess."

It seemed like a formidable challenge, but armed with their new insights into native starches, Cargill's scientists began approaching label-friendly solutions differently.

"Through our analysis, we found a starch that could withstand freeze-thaw cycles remarkably well, keeping a firm hold on water through multiple cycles," Kozora explains. "While it couldn't alone replace all of the functionality of a modified starch in a frozen sauce, it offered a promising start."

Building on that foundation, Cargill scientists worked on validating different starch bases and began looking at starch systems that would offer the best results while still being label-friendly.

"As we looked at the data, we began to wonder, what would happen if we married the functional benefits of different botanical sources together to obtain the viscosity, texture and shelf life stability that offered real advantages to our customers." Kozora recalls.

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Through extensive prototype testing, the team developed SimPure™ 99560, a starch blend that could withstand up to 10 freeze-thaw cycles, performing on par with the modified starches currently in use in frozen-ready meals. SimPure™ 99560 delivered great texture and viscosity, holding up to the rigors of modern processing and consistently delivering the creaminess and mouthfeel customers expected. It also performed well in both acidic and neutral pH systems.

Equally important, this new functional starch was cost-competitive to other label-friendly options. Customer-validated testing confirmed the company's claims. In one test, a customer held gravy created with SimPure™ 99560 in a kettle for four hours at 180°F, simulating a temporary production line shut down. The label-friendly starch solution delivered comparable performance to the customer's legacy modified starch. Another customer validated SimPure™ 99560's ability to withstand 12 complete freeze-thaw cycles.

"Sometimes, you don't need something fancy to do the job," Kozora notes. "With SimPure™ 99560, we're getting great functionality with a unique starch system."

Still, she admits the results took company researchers by surprise.

"Initially, there was a lot of skepticism," Kozora acknowledges. "As an industry, we've always assumed that native starches aren't as robust as modified starches. But when we started developing prototypes and completing analytical and sensory testing, it became apparent we were on to something of real value."

Think Different

SimPure™ 99560 is the first botanical starch blend of its kind, but Kozora expects others will soon join its ranks.

"By looking at native and functional native starches in a different way, we've dramatically increased the number of tools in our toolbox," she explains.

It's also changed how Cargill works with its customers. Now when company scientists meet with product developers, they first define the specific textural attributes, functional characteristics and processing requirements needed. Then, they compare those needs to the documented characteristics of each starch, enabling researchers to create the best blend for a given application.

Cargill's work to develop label-friendly starch solutions dovetails with development efforts throughout the company's broad ingredient portfolio. Aided by seasoned formulation experts, Cargill partners with customers to develop palate-pleasing foods and beverages aligned with consumers' evolving ingredient preferences. With wide-ranging, label-friendly solutions, including everything from stevia sweeteners and proteins to non-GMO canola oils and pectin, the company can leverage its entire ingredient portfolio and address customer challenges from a multitude of directions. It's a holistic approach that truly sets Cargill apart from others in the industry.

The interest in transparency and the demand for label-friendly products shows no signs of waning. Consumers want to know what's in the food they eat, where it comes from and how those ingredients were made. Cargill understands the challenges associated with product development in today's marketplace, and stands ready to collaborate with customers to address their unique needs.

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