



NOVATION[®]

Lumina 8300 and 8600

Functional native rice starches

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Today's presenter



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Agenda

- NOVATION® Lumina 8300 and 8600 functional native rice starches
 - Product introduction
 - Product information
- Example case studies
- New prototype formulas
- Closing

NOVATION[®] Lumina functional native rice starches

Superior functionality with preferred “rice starch” label enabling clean label formulations consumers desire

High-performance

- Clean label texturizers for your most delicate applications

Superior functionality

- Designed to maintain your products’ most appealing qualities with little impact on the color or flavor of your formulations

Improved resiliency of supply chain



High-performance clean label texturizers for the most delicate applications

Meet consumer demand for “natural,” clean label products without compromise

Clean label

- Enables natural* product positioning (as this statement is in relation to our ingredient)
- Consumer-preferred “rice starch” labeling¹
- Non-GMO, gluten-free and does not require allergy labeling

Color and flavor

- Suitable for color and flavor sensitive applications
- Whiter color and superior flavor release compared to current products

Performance

- Superior process tolerance compared to native starches
- Excellent freeze/thaw and shelf-life stability
- Unique smooth and creamy texture

Superior functionality confirmed by customers

NOVATION® Lumina functional native rice starches let the natural flavors and colors of applications shine through.

Keep the flavor
and color
consumers want



Superior flavor release and a neutral color, ideal for applications with lighter color or delicate flavor

Highest freeze/thaw
stability of
all functional
native starches*



Excellent cold temperature stability, perfect for dairy and frozen ready meal applications to extend the shelf life of your products

Create unique
smooth and
creamy texture



Fat replacer with light, authentic texture provides even creamier solutions and is a natural fit for dairy and Mochi applications

Provide a sensory
experience
consumers
will love



Meet consumer demand for clean labels without compromising flavor, texture or performance

Leverage high
digestibility in
special nutrition



Rice starches are digested faster with the highest readily digestible starch (RDS) level which provides benefit for baby food and special nutrition foods



Ingredion.

Be what's next.

Experience the benefits of functional native starches like never before

















Primary application areas for NOVATION® Lumina 8300 and 8600 functional native starches

The roadblock:

- The inherent color and taste impact of native functional rice starches were limiting broader usability

Drive consumer appeal:

- NOVATION® Lumina functional native starches, designed specifically to improve color and flavor release, lets the natural flavors and colors shine through

Savory	Fruit & vegetable-based products	Alternative products
 Soups	 Baby meals and purees	 Plant-based dairy alternative
 Sauces	 Fruit preps	 Plant-based meats and applications
 Ready meals	Dairy	Other
 White sauces, cooking creams and ready meals	 Yogurts	 Pet food
 Dressings	 Dairy desserts and custards	 Baked goods
 Processed meat, tumbled marinated poultry	 Dairy drinks	
	 Ice cream	



Case studies



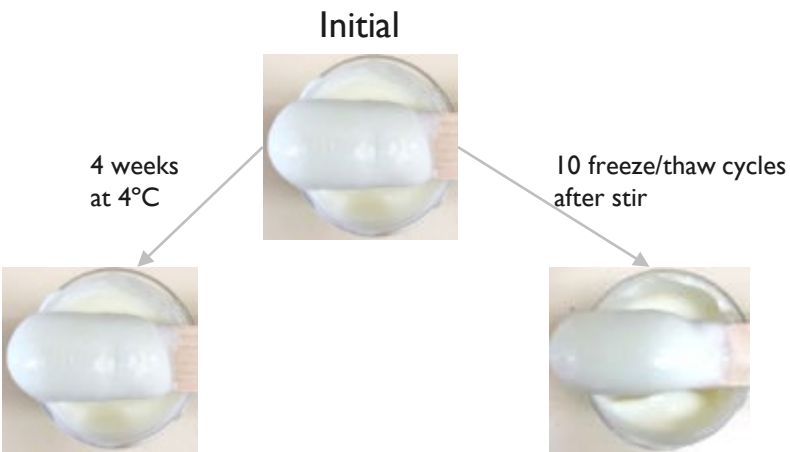
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Deliver vibrant color, clean flavor and creamy texture in a béchamel sauce

CHALLENGE	SOLUTION
Current ingredient was masking some buttery/dairy flavor notes and delivering an off-white color	NOVATION® Lumina 8600 functional native rice starch, statistically significant higher in buttery/dairy flavor than the current offering, provided a cleaner flavor and reduction in grain and rice notes

Ingredient	%
Milk	89.7
Butter	5.0
Salt	0.3
NOVATION® Lumina 8600 functional native rice starch	5.0
Total	100.0

- NOVATION® Lumina 8600 functional native rice starch
 - Produced a bright white sauce
 - Delivered a nice and thick texture
 - Had good process tolerance
- Maintaining the shelf-life stability, refrigerated and freeze/thaw stability



Create a sous vide egg bite with vibrant color, clean flavor notes and a smooth texture while adding good process suspension

CHALLENGE	SOLUTION
Develop a sous vide egg bite with good suspension, color and process tolerance with a consumer-preferred ingredient label	NOVATION® Lumina 8600 functional native rice starch provided good suspension, full egg color, clean taste and smooth texture with a preferred “rice starch” label ¹

Ingredient	%
Eggs*	62.64
Cottage cheese	19.6
Salt	0.4
Shredded Monterey Jack cheese	6.95
Shredded Gruyere cheese	6.35
NOVATION® Lumina 8600 functional native rice starch	4.0
Total	100.0

1. Set sous vide to 167°F
2. In a separate container, combine all ingredients and puree with immersion blender until uniform
3. Spray molds with a non-stick spray
4. Pour egg mixture into molds and cover
5. Place molds into the sous vide and cook eggs for about 60 minutes or until completely set
6. Remove molds when done and place in freezer
7. Pop egg bites out of molds and microwave for 1 minute 30 seconds (or until fully heated)



NOVATION® Lumina 8600 functional native rice starch delivered good bite, suspension, color, taste and texture



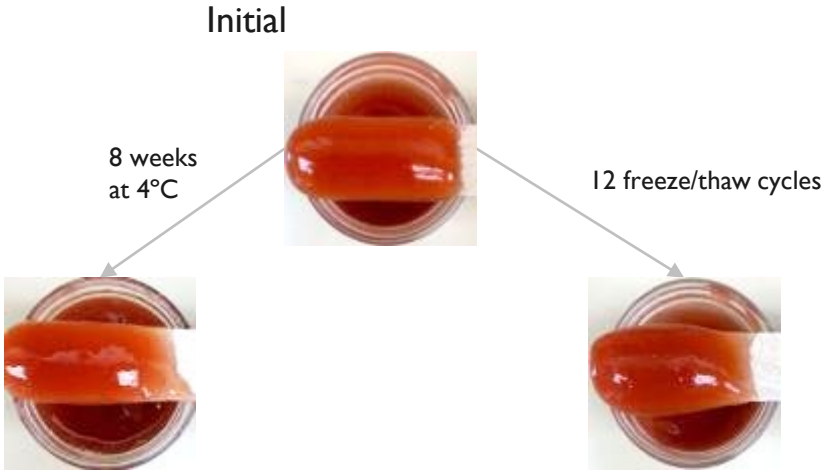
Maximize cold temperature stability in a fruit prep while maintaining vibrant color, and smooth texture

CHALLENGE	SOLUTION
Limited refrigerated shelf-life stability is observed when using other native texturizers in the form of gelling or syneresis	NOVATION® Lumina 8300 functional native rice starch provided good thickening, vibrant color and fruit prep refrigerated stability with a smooth creamy texture over its shelf life.

Ingredient	%
Sugar	42.3
Frozen strawberries	40.0
Water	9.3
Sugar	4.7
NOVATION® Lumina 8300 functional native rice starch	3.7
Total	100.0
Citric acid	Adjust pH 3.3

- 1. Mix starch with 10% of sugar together
- 2. Weigh remaining sugar separately
- 3. Weigh strawberry puree from Kerr by Ingedion and add to slurry
- 4. Adjust pH to 3.3
- 5. Cook at 203°F in boiling water bath for 12 minutes
- 6. Add remaining sugar and mix additional 3 minutes
- 7. Cool and fill

- NOVATION® Lumina 8300 functional native rice starch enabled
 - Good refrigerated shelf-life stability of over 8 weeks
 - Maintained textural attributes after refrigerated and frozen conditions





New prototype formulas

Gluten free cheese sauce with homemade texture without compromising flavor or color

IDEA	SOLUTION
Create a sauce with homemade texture without compromising flavor, color, or texture with excellent process and cold temperature stability while maintaining the cleanest ingredient label declaration	NOVATION® Lumina functional native rice starches are suitable for all applications, especially for white or light-colored applications with delicate flavors, offering superior process tolerance, freeze/thaw and shelf-life stability — all while supporting “natural” claims and labels, which is proven to drive consumer appeal of your products¹

Ingredient	%
Milk, reduced fat, 2%	64.48
Cheese, cheddar, sharp, colored	18.5
Cheese, American, Velveeta	9.24
Cheese, Gruyere	4.63
NOVATION® Lumina 8600 functional native rice starch	1.48
HEMOCRAFT Create 860	1.34
Salt, table	.28
Pepper, black, ground	.05
Total	100.0



Clean label brown gravy with vibrant color, clean flavor and creamy texture

IDEA	SOLUTION
Create a gravy with homemade texture without compromising flavor, color, or texture with excellent process and cold temperature stability while maintaining the cleanest ingredient label declaration	NOVATION® Lumina functional native rice starches are suitable for all applications, especially for white or light-colored applications with delicate flavors, offering superior process tolerance, freeze/thaw and shelf life stability — all while supporting “natural” claims and labels, which is proven to drive consumer appeal of your products ¹

Ingredient	%
Water, deionized	89.18
NOVATION® Lumina 8600 functional native rice starch	4.3
Oil, canola	1.66
Flavor and extract, beef	1.56
Fat, beef	1.4
Tomato, paste	0.82
Salt, table	0.66
Onion powder	0.17
Paprika	0.07
Garlic powder	0.07
Color, caramel, generic	0.06
Pepper, black, ground	0.05
Total	100.0



¹ Ingredion proprietary research, Global Clean Label Consumer Study, 2020

Clean label curried apple bisque vibrant color, clean flavor and creamy texture

IDEA	SOLUTION
Create a soup with homemade texture without compromising flavor, color, or texture with excellent process and cold temperature stability while maintaining the cleanest ingredient label declaration	NOVATION® Lumina functional native rice starches are suitable for all applications, especially for white or light-colored applications with delicate flavors, offering superior process tolerance, freeze/thaw and shelf life stability — all while supporting “natural” claims and labels, which is proven to drive consumer appeal of your products¹

Ingredient	%
Apple, granny smith	42.33
Juice, apple	23.05
Water	16.07
Onion, Vidalia diced	14.82
NOVATION® Lumina 8600 functional native rice starch	0.99
Butter, unsalted	0.99
Salt, table	0.59
Curry powder, madras, mild	0.40
Ginger, chopped	0.40
Garlic, minced	0.33
Pepper, ground, black	0.03
Total	100.0



Clean label Minnesota wild rice and wheat berry soup with clean flavors, vibrant color and smooth texture

IDEA	SOLUTION
Create a soup with homemade texture without compromising flavor or color, with excellent process and cold temperature stability while maintaining the cleanest ingredient label declaration	A clean label soup with superior freeze/thaw and shelf life stability

Ingredient	%
Broth, chicken, reduced sodium	62.82
Leeks	8.81
Celery, diced	7.45
Carrots, peeled and diced	5.08
Rice, wild	3.39
Cream, heavy	3.38
Wheat berries, cooked al dente	3.38
Wine, sherry	2.07
Butter, unsalted	1.36
NOVATION® Lumina 8600 functional native rice starch	1.19
HEMECRAFT® Pulse 3103 flour	0.61
Salt	0.07
Pepper, ground, black	0.05
Total	100.0



NOVATION® Lumina functional native rice starches

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High-performance

- Clean label texturizers for your most delicate applications

Superior functionality

- Designed to maintain your products’ most appealing qualities with little impact on the color or flavor of your formulations

Improved resiliency of supply chain





Create high-performance products
your consumers will love

Let's get started!

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Questions?