

FIBERSTAR[®]



Reference Guide

for Food Applications

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Product of U.S.A.

What is Citri-Fi®?

Citri-Fi is a multi-functional, clean label ingredient derived from natural citrus fiber. The patented process creates a fiber with a unique composition that provides water holding and emulsification properties.


Meats

- Yield Improvement
- Phosphate Replacement
- Purge Reduction
- Sodium Reduction Synergy
- Moisture Retention



Bakery

- Pectin Replacement
- Moisture Retention
- Fat Reduction
- Egg Reduction
- Gluten Free



Sauces & Dressings

- Emulsification Stability
- Fat Reduction
- Syneresis Reduction
- Thickener
- Adhesion Properties



Dairy

- Syneresis Reduction
- Emulsification Stability
- Fat Reduction
- Thickener
- Yield Improvement



Beverages

- Stability
- Gum Replacement
- Mouthfeel Improvement
- Thickener



Frozen Foods

- Moisture Control
- Fat Reduction
- Ice Crystallization Reduction
- Freeze/Thaw Stability



Health and Wellness

- Egg & Fat Reduction
- Gluten Free
- Pectin Replacement
- Sodium Reduction Synergy
- Phosphate Replacement



Citri-Fi® Product Lines

Product	Description	Standard Grind (95% < 30 mesh)	Fine Grind (FG) (95% < 100 mesh)	M40 (95% < 200 mesh)	M20
Citri-Fi 100	Citrus Fiber	●	●	●	●
Citri-Fi 125	Citrus Fiber	--	●	●	--
Citri-Fi 200	Citrus Fiber Co-Processed with Guar Gum	●	●	--	--
Citri-Fi 300	Citrus Fiber Co-Processed with Xanthan Gum	--	●	●	--

Formulation Guidelines

Industry	Product Application	Recommended Type of Citri-Fi	Primary Objectives	Suggested % of Citri-Fi in Formula Weight	Suggested Range of Citri-Fi to Water Ratio	Incorporation Method
Meats	Beef, Ground	100FG, 125FG, 200FG	add moisture; reduce purge; increase yield	0.25% – 0.75%	1 : 4 to 10	Dry/Fat
	Ham, Injected	100M40	increase yield; reduce purge	0.25% – 0.75%	--	Dry
	Hot Dogs	100FG, 125FG, 200FG	increase yield; improve texture	0.25% – 0.50%	1 : 4 to 7	Dry/Fat
	Kebab/Gyros	100, 100FG	reduce phosphates; increase yield; reduce purge	0.25% – 1.00%	1 : 4 to 7	Dry/Fat
	Meatballs/Sausage	100FG, 125FG, 200FG	reduce phosphates; increase yield; reduce purge	0.25% – 1.00%	--	Dry/Fat
	Meat Fillings	125FG, 200, 200FG	reduce syneresis; increase yield; stabilize	0.25% – 1.00%	1 : 4 to 7	Dry/Fat
	Meat Loaf	125FG, 200FG	egg reduction	--	1 : 9 to 12	Dry/Fat
	Pet Canned Food	100FG, 200FG	reduce syneresis; increase yield; stabilize	0.25% – 0.75%	--	Dry/Fat
	Poultry, Injected	100M40	reduce phosphates; increase yield; reduce purge	0.25% – 0.50%	--	Dry
	Sausage	100, 200	reduce phosphates; increase yield; reduce purge	0.25% – 1.00%	1 : 4 to 7	Dry/Fat
	Tocino	100FG, 200	bind and stabilize moisture	0.25% – 0.75%	1 : 4 to 7	Dry
	Tuna, Canned	100FG, 200FG	reduce syneresis	0.25% – 1.00%	--	Dry/Fat

Industry	Product Application	Recommended Type of Citri-Fi	Primary Objectives	Suggested % of Citri-Fi in Formula Weight	Suggested Range of Citri-Fi to Water Ratio	Incorporation Method
Sauces/Dressings	Brown Roux	100, 200	thicken; stabilize emulsion	1.00% – 2.00%	1 : 4 to 7	Dry
	Chicken Pasta Salad	100FG, 200FG	bind and stabilize moisture	0.25% – 0.50%	--	Dry
	Coleslaw	100FG, 200FG	bind and stabilize moisture	0.25% – 0.75%	--	Dry
	Cream Based Sauce	200FG	thicken; stabilize emulsion	0.25% – 1.50%	--	Dry/Fat
	Dressing	100FG, 100M40	modified starch replacement	0.25% – 1.50%	--	Dry/Fat
	Mayonnaise	100M40, 300M40	thicken; stabilize emulsion	0.25% – 1.50%	--	Dry/Fat
	Mayonnaise	100M40, 300M40	egg reduction	--	1:15 to 20	Dry/Fat
	Mayonnaise	100M40, 300M40	fat reduction	--	1:7 to 14	Dry/Fat
	Salad Dressing	100M40	thicken; stabilize emulsion	0.25% – 1.50%	--	Dry/Fat
	Salsa	100FG, 200FG	reduce syneresis; provide emulsion	0.25% – 1.00%	--	Dry
	Sauces	100FG, 200FG	thicken; stabilize emulsion	0.25% – 1.00%	--	Dry/Fat
	Tomato Sauce	100, 100FG, 100M40	reduce syneresis; stabilize emulsion	0.25% – 2.00%	--	Dry
	Tomato Soup	100M40	stabilize emulsion; improve mouthfeel	0.25% – 0.75%	--	Dry
Beverages	Dry Powder	100, 100FG	stabilize; provide mouthfeel; clouding agent	0.25% – 1.00%	--	Dry
	Flavor Suspension	100, 300M40	thicken; stabilize emulsion	0.25% – 1.50%	--	Dry/Fat
	Smoothies	100, 100FG, 100M40, 200FG	thicken; improve mouthfeel	0.25% – 1.50%	--	Dry
	RTD Beverage/UHT	100FG	improve texture	0.25% – 1.00%	--	Dry
	RTD Fruit Juice	100, 100FG	pulp replacement	--	1:11 to 15	Dry
	UHT Juice Drinks	100FG	replace xanthan gum; provide pulpy mouthfeel	0.6% replacement in formula	--	Dry
Dairy	Cheese – Fresh	100FG	reduce syneresis; increase yield	0.25% – 0.75%	--	Dry/Pre-hydrated with milk
	Cheese – Processed	100FG	reduce syneresis; increase yield	0.25% – 0.75%	--	Fat/Dry
	Cottage Cheese (Quark)	100FG, 200FG	reduce syneresis; improve consistency	0.20% – 1.00%	--	Dry
	Cream Cheese	100M20	reduce syneresis	0.20% – 1.00%	--	Fat/Dry
	Feta Cheese	100	bind and stabilize moisture	0.25% – 0.75%	--	Dry/Pre-hydrated with milk
	Frozen Yogurt	200FG	fat reduction	--	1 : 7 to 10	Dry/Pre-hydrated with milk
	Ice Cream	100M40	thicken; stabilize emulsion	0.25% – 1.50%	--	Dry/Pre-hydrated with milk
	Ice Cream – Hard or Soft	200FG	fat reduction	--	1 : 5 to 7	Dry/Pre-hydrated with milk
	Low Fat Spreads	100FG, 200FG	improve texture and quality	0.25% – 0.35%	--	Dry/Pre-hydrated with milk
	Margarine	100FG, 200FG	improve emulsification	0.25% – 1.50%	--	Oil (melted fat)
	Sour Cream	200FG	thicken; stabilize emulsion	0.10% – 0.30%	--	Dry/Pre-hydrated with milk
	Sour Cream – Low Fat	200FG, 100	thicken; reduce syneresis	0.20% – 0.50%	--	Added into dairy cream
	Tzatziki	100FG	reduce syneresis	0.25% – 0.50%	--	Fat
	Yogurt – Drinkable	100FG, 100M40	thicken; improve quality	0.10% – 0.20%	--	Dry
Yogurt	100FG, 200FG	improve texture and viscosity	0.20% – 0.40%	--	Dry/Pre-hydrated with milk	

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Bakery	Bagels	100FG, 300FG	improve softness; maintain moisture	0.25% – 1.00%	1 : 3.5 to 6	Dry
	Biscuits	100	strengthen; improve texture	0.75% – 1.00%	1 : 3.5 to 6	Dry
	Biscuits	100	fat reduction	--	1 : 5 to 7	Dry
	Bread & Buns	100, 125FG	fat reduction	--	1 : 5 to 7 (100) 1 : 14 (125FG)	Dry
	Bread (Gluten Free)	100FG, 125FG, 200FG	improve moisture	0.20% – 0.60%	--	Dry
	Brownies	100	fat reduction	--	1 : 5 to 7	Dry
	Cake/Muffins	125FG, 200FG	egg reduction	--	1 : 14 to 15 (200FG) 1 : 21 to 22 (125FG)	Dry
	Cake/Muffins	100, 200	fat reduction	--	1 : 5 to 7	Dry
	Cake (high-ratio)	125M40	egg reduction	--	1 : 19 to 21	Dry
	Cookies	125FG	egg reduction	--	1 : 20 to 22	Dry
	Cookies	100	fat reduction	--	1 : 2 to 4	Dry
	Cookies	200FG	chewiness; moisture management	0.50% – 1.00%	--	Dry
	Crepes / Belgian Pancakes	125FG	egg reduction	--	1 : 20 to 24	Dry
	Sweet Rolls	100	fat reduction	--	1 : 5 to 7	Dry
	Croissants	200FG	fat reduction	--	1 : 5 to 7	Dry
	Donuts (cake)	200FG	fat reduction	--	1 : 5 to 7	Dry
	Donuts (yeast raised)	100	fat reduction	--	1 : 7 to 9	Dry
	Fruit Filling	100FG, 200FG	prevent blow-out; thicken; improve mouthfeel	0.25% – 1.00%	1 : 4 to 7	Dry
	Fruit Preparation	100FG	pectin replacement	1.5% – 2.50%	--	Dry/Puree
	Magdalenas	100	fat reduction	--	1 : 5 to 7	Dry
	Magdalenas	125FG, 200FG	egg reduction	--	1 : 14 to 15 (200FFG) 1 : 24 to 26 (125FG)	Dry
	Pasta	125FG	egg reduction	--	1 : 15 to 19	Dry
	Pie Crusts	100FG	increase strength	--	1:10	Dry
	Pizza Dough	100FG	improved texture	0.25% – 0.75%	1 : 5 to 7	Dry
	Pound Cake	200FG	fat (butter) reduction	--	1 : 10 to 14	Dry
	Tortillas	100	fat reduction	--	1 : 4 to 5	Dry
White yeast bread	100FG, 300FG	improve texture; maintain moisture	0.50% – 1.00%	1 : 3.5 to 6	Dry	

Usage Calculations

The following directions are to be used as guidelines for determining the correct amount of Citri-Fi® to be used in a product application. Because all formulations are unique, formulas will need to be adjusted to identify the correct amount of Citri-Fi® and water to be added and/or the percent of egg/fat to be reduced.

Fat Reduction

For fat reduction, a Citri-Fi®100 or 125FG product is generally recommended. Once the weight of fat to be replaced is identified (maximum 50% fat in formula), the combined weight of Citri-Fi® and water in the new formulation is equal to that of the fat replaced. The recommended starting ratio of Citri-Fi® to water for Citri-Fi® 100 is 1 part Citri-Fi® 100 to 5 - 7 parts water. The ratio of Citri-Fi® 125FG to water is 1 part Citri-Fi® 125FG to 13 - 17 parts water.

Egg Reduction

For egg reduction, Citri-Fi® 200FG or Citri-Fi® 125FG is recommended. Once the percent of egg to be replaced is identified, the combined Citri-Fi® and water added to the formulation is equal to the weight of the eggs replaced. If using Citri-Fi® 200FG, recommended starting ratio is 1 part Citri-Fi® 200FG to 14 parts water. If using Citri-Fi® 125FG, the ratio is 1 part Citri-Fi® 125FG to 21 parts water.