

Whey Permeate in Dairy Applications



Build dairy flavor, optimize solids and manage cost across dairy formulations.

Key Benefits in Dairy Applications

Dairy Flavor	Contributes naturally occurring dairy solids and minerals that can support a balanced dairy flavor profile.
Solids & Body	Provides lactose and dairy minerals that contribute to total solids and can help support body and finished product characteristics.
Cost Optimization	Partially replace higher-cost dairy ingredients where protein functionality is not required while maintaining dairy solids.
Mineral Contribution	Naturally occurring dairy minerals can contribute flavor complexity and help support overall formulation balance.
Formulation Flexibility	Provides dairy solids with minimal protein contribution, giving formulators another tool for balancing protein, lactose, minerals and total solids.

What it Contributes

	Lactose	Dairy solids, mild sweetness and total solids contribution
	Dairy Minerals	Flavor enhancement and mineral contribution
	Milk Solids	Body, flavor and formulation flexibility
	Low Protein	Adds dairy solids with minimal protein contribution

Typical Use Levels*

Application	Suggested Starting Level
Frozen Dairy Desserts	2-8%
Dairy-Based Beverages	1-5%
Cultured Dairy Products	1-4%
Dairy Desserts & Puddings	2-6%
Dry Dairy Mixes	3-10%
Dairy-Based Sauces	2-6%

*Optimize through bench-top formulation trials

Common Replacement Opportunities

Evaluate whey permeate as part of the total dairy solids system. It may allow optimization across multiple dairy and carbohydrate ingredients.

Ingredient to Evaluate	Potential Benefit
Nonfat Dry Milk	Lower cost while maintaining dairy solids where protein functionality allows
Skim Milk Powder	Partial replacement where protein requirements allow
Sweet Whey Powder	Improved economics and dairy solids contribution
Lactose	Similar lactose contribution with added dairy minerals
Maltodextrin	Opportunity to optimize the overall solids system
Sugar	Contributes mild sweetness while adding dairy solids

Formulation Considerations

- ✓ Account for lactose when balancing total carbohydrates and sweetness.
- ✓ Protein contribution decreases when replacing milk powders or other protein-containing dairy ingredients.
- ✓ Mineral composition may influence flavor and salt perception.
- ✓ Consider total lactose levels in applications where lactose crystallization may affect finished product quality.
- ✓ Evaluate body, viscosity and mouthfeel when adjusting the dairy solids system.
- ✓ Confirm performance through bench-top trials when replacing ingredients that contribute protein functionality.

Processing Benefits

- Consistent powder flowability
- Excellent dry blending characteristics
- Rapid dispersion
- Compatible with standard dairy processing systems
- Provides dairy solids with minimal protein contribution

Where it Delivers the Most Value

- ✓ Frozen dairy desserts
- ✓ Dairy-based beverages
- ✓ Cultured dairy products
- ✓ Puddings & desserts
- ✓ Dry dairy mixes
- ✓ Dairy-based sauces
- ✓ Cream-style products

Example Formulation Applications

Potential ingredient reduction when using whey permeate.

Frozen Dairy Dessert



Using 3% Whey Permeate

- Reduce Nonfat Dry Milk
- Optimize the dairy solids system
- Balance lactose and sweetness
- Maintain desired dairy character

Result: Improved ingredient cost efficiency while contributing dairy solids and balanced dairy flavor.

Dairy-Based Beverage

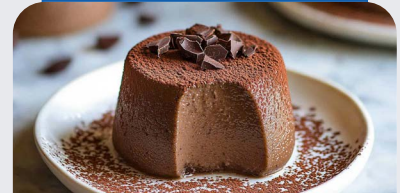


Using 5% Whey Permeate

- Partially replace milk powder where protein requirements allow
- Optimize total dairy solids
- Account for lactose and mineral contribution

Result: More efficient dairy solids formulation with balanced dairy flavor and mineral contribution.

Dairy Dessert/Pudding



Using 4% Whey Permeate

- Reduce Nonfat Dry Milk
- Optimize dairy and carbohydrate solids
- Adjust sweetness as needed
- Evaluate finished viscosity and mouthfeel

Result: Improved formulation economics while maintaining dairy solids, body and dairy character.

Need formulation support?

The Proliant Dairy Ingredients technical team can assist with ingredient selection, formulation optimization, pilot trials and application development.



Visit our Innovation Kitchen for application ideas and technical resources.

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