

# Whey Permeate in Confectionery



*Build dairy flavor, optimize solids and manage cost in confectionery formulations.*

## Key Benefits in Confectionery Applications

|                                      |                                                                                                   |
|--------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Enhanced Dairy Flavor</b>         | Contributes authentic dairy notes that complement chocolate, caramel and cream flavors.           |
| <b>Browning &amp; Caramelization</b> | Lactose supports Maillard browning and development of cooked dairy and caramelized notes.         |
| <b>Solids &amp; Texture</b>          | Provides dairy solids that can contribute body and help support desired texture.                  |
| <b>Cost Optimization</b>             | Partially replace higher-cost dairy ingredients while maintaining formulation functionality.      |
| <b>Mineral Contribution</b>          | Naturally occurring dairy minerals can support flavor complexity and overall formulation balance. |

## What it Contributes

|  |                       |                                                     |
|--|-----------------------|-----------------------------------------------------|
|  | <b>Lactose</b>        | Dairy solids, mild sweetness and browning potential |
|  | <b>Dairy Minerals</b> | Flavor enhancement and mineral contribution         |
|  | <b>Milk Solids</b>    | Body, flavor and formulation flexibility            |
|  | <b>Low Protein</b>    | Adds dairy solids with minimal protein contribution |

## Typical Use Levels\*

| <b>Application</b>                      | <b>Suggested Starting Level</b> |
|-----------------------------------------|---------------------------------|
| <b>Compound Coatings</b>                | 3-7%                            |
| <b>Caramel &amp; Toffee</b>             | 2-8%                            |
| <b>Chocolate</b>                        | 1-5%                            |
| <b>Cream &amp; Dairy-Based Fillings</b> | 2-8%                            |
| <b>Spreads</b>                          | 3-7%                            |
| <b>Nougat &amp; Chewy Confections</b>   | 1-4%                            |

\*Optimize through bench-top formulation trials

## Common Replacement Opportunities

Evaluate whey permeate as part of a total formulation strategy. It may allow optimization across multiple dairy and carbohydrate ingredients.

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

## Formulation Considerations

- ✓ Lactose can increase browning during heated processing.
- ✓ Evaluate sweetness when replacing sucrose or other sweeteners.
- ✓ Protein contribution decreases when replacing milk powders.
- ✓ Mineral composition may influence flavor and salt perception.
- ✓ Evaluate texture, crystallization and moisture management in the finished product.

## Processing Benefits

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

## Where it Delivers the Most Value

- ✓ Chocolate & compound coatings
- ✓ Caramels
- ✓ Toffee
- ✓ Spreads
- ✓ Cream fillings
- ✓ Dairy-based centers
- ✓ Confectionery coatings
- ✓ Nougat & chewy confections

## Example Formulation Applications

Potential ingredient reduction when using whey permeate.

### Caramel



#### Using 5% Whey Permeate

- Reduce Nonfat Dry Milk
- Reduce Sweet Whey Powder
- Optimize sugar/solids system

**Result:** Lower ingredient cost with enhanced cooked dairy and caramelized flavor.

### Chocolate/ Compound Coating



#### Using 3% Whey Permeate

- Partially replace milk powder
- Optimize lactose/dairy solids
- Maintain desired dairy character

**Result:** Reduced dairy solids cost with balanced dairy flavor.

### Cream Filling



#### Using 4% Whey Permeate

- Reduce Nonfat Dry Milk
- Optimize dairy solids
- Adjust sweetness as needed

**Result:** Improved cost efficiency while maintaining body and dairy flavor.

## 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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