



AMERICAN  
**Dairy Products**  
INSTITUTE™

MINERALS & CARBOHYDRATES

# Dairy Permeate (Milk & Whey)

Also known as: Milk Permeate, Whey Permeate and Dairy Products Solids

## Product Definition

Dairy Permeate is manufactured by the removal of protein and other solids from milk or whey, resulting in a product with a high concentration of lactose. Removal of the dairy constituents is accomplished by physical separation techniques such as filtration and diafiltration. The acidity of Dairy Permeate may be adjusted by the addition of safe and suitable pH adjusting ingredients.

Dairy Permeate meets the definition of Dairy Product Solids, which is the subject of a GRAS notification to the U.S. Food and Drug Administration, and it complies with all provisions of the U.S. Federal Food, Drug, and Cosmetic Act.

## Composition

PARAMETER	UNITS OF MEASURE	MILK PERMEATE		WHEY PERMEATE	
		TYPICAL VALUES	LIMITS	TYPICAL VALUES	LIMITS
LACTOSE	%	78 – 88	76 minimum	76 – 85	76 minimum
PROTEIN	%	3 – 5	2 minimum	2 – 7	7 maximum
FAT	%	0 – 1.0	1.5 maximum	0 – 1.0	1.5 maximum
ASH (PHOSPHATED)	%	8 – 11	14 maximum	8 – 11	14 maximum
TOTAL MOISTURE	%	3 – 4.5	5.0 maximum	3 – 4.5	5.0 maximum

## Other Characteristics

PHYSICO-CHEMICAL PROPERTIES		
PARAMETER	UNITS OF MEASURE	LIMITS
PH	–	5.5 – 6.6
COLOR	visual	white to cream
FLAVOR	sensory	bland, clean; free from offensive flavors

## Product Labeling

### Recommended identifications:

Milk Permeate (for permeate derived from milk only)  
Whey Permeate (for permeate derived from whey only)  
Dairy Product Solids (suitable in all cases)

### Alternative identifications (whey derivation only):

Modified Whey  
Deproteinized Whey  
Dried Whey Products  
Dried Whey Solubles

## Nutrition Facts

servings per container	
<b>Serving size</b>	<b>(100g)</b>
<b>Amount per serving</b>	
<b>Calories</b>	<b>360</b>
% Daily Value*	
Total Fat 0g	0%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 0mg	0%
Sodium 700mg	30%
Total Carbohydrate 87g	32%
Dietary Fiber 0g	0%
Total Sugars 87g	
Includes 0g Added Sugars	0%
<b>Protein 4g</b>	
Vitamin D 0mcg	0%
Calcium 357mg	25%
Iron 1mg	6%
Potassium 2180mg	45%
Phosphorus 568mg	45%
Magnesium 133mg	30%

\*The % Daily Value tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

## Functionality and Applications



### HIGH PERFORMANCE:

Browning  
Acid Stability



### MEDIUM PERFORMANCE:

Hydration Rate  
Heat Stability

Dairy Permeate can be used as a partial replacement for other dairy solids in many food applications for cost reductions. It provides browning and crumb softening properties to bakery products; sugar replacement and browning properties to confectionary products. It has good flowability for dry mix applications such as hot/cold beverages, soups, sauces and seasoning blends. It can be used to reduce sodium and enhance flavors in almost any application. Nutritionally, it provides lactose and a portion of all the vitamins and minerals from milk and/or whey. Milk permeate may also be used for standardizing skim milk or whole milk powders.

## Product Examples

(launched in the last 2 years)

*Credit: Innova Market Insights*



**Blue Bunny Dairy Dessert:** Dairy product solids is an economical dairy ingredient and contributes to the milk solids non fat (MSNF) for this ice cream product.



**Kroger Frosted Toaster Treats** Whey permeate (dairy product solids) provides browning and enhancement for this toaster pastry. It is also an economical dairy ingredient for private label products.



**Brownie Baker Abuelita Cookie:** Hot cocoa mixes often use dairy product solids as an economical dairy ingredient in combination with nonfat dry milk. This cookie uses a hot cocoa mix as an ingredient to contribute flavor and texture.



**GoodSport Sports Drink:** Milk permeate provides all the naturally occurring sugars and electrolytes needed for this hydration drink. Hydrolyzing the lactose in permeate provides sweetness without adding more sugar.



**Kroger White Cheddar Rice Cakes:** Whey permeate is an economical dairy ingredient that can also enhance the cheese flavor in this white cheddar puffed rice snack.