

# SIMPLESSE<sup>®</sup>

MICROPARTICULATED WHEY PROTEIN CONCENTRATE



**YOU  
CAN**

# SIMPLESSE®

## MICROPARTICULATED WHEY PROTEIN CONCENTRATE

### The *Whey* to Healthy Indulgence

In recent years, consumers have become increasingly aware of what they eat. With lifestyle-related diseases and health problems on the rise, ingredients and label claims are becoming a priority for consumer's food product decisions.

The decade of focus given to weight management has resulted in increased consumer awareness, and changes in consumer buying and eating habits. Products are now positioned as 'better-for-you' versus slimming, allowing a consumer to maintain a healthy weight and lifestyle.

A balance is needed between wanting to live and eat healthy without sacrificing the sense of indulgence. Today's consumers have taken a different approach to eating, they want to maintain a healthy lifestyle but have the need to indulge. (Mintel, 2010)

### The Concept

CP Kelco has decades of experience in providing food and beverage manufacturers solutions to processed food challenges. In the case of SIMPLESSE, including how to enhance the quality and sensory attributes of low-fat and fat-free foods.

SIMPLESSE microparticulated whey protein concentrate was specifically designed to provide a smooth and creamy mouthfeel in low-fat, reduced-fat and fat-free food and beverage products. The product line has been successful in providing added benefits in a number of applications for many years. SIMPLESSE microparticles behave almost identical to fat globules, which enable food and beverage companies to reduce the fat content of a final product without compromising sensory attributes.

### Uniqueness of SIMPLESSE® MPWPC

The unique microparticulation process used to create SIMPLESSE produces uniform microparticles averaging one micron in diameter. Variation in the particle volume can alter sensory attributes and change both the mouthfeel and appearance of the overall product. Due to the consistent particle size, spherical shape and deformable nature, SIMPLESSE microparticles behave almost identically to that of fat globules and provide a unique set of functionalities.

The particle size distribution of the SIMPLESSE 100 product is illustrated in the diagram on the right.

Particle size of protein dispersion equal to 0.1 microns will create a watery mouthfeel. A particle size of 0.01-3.0 microns provides an optimum level of creaminess – similar to the size of emulsified fat droplets in food systems. Particles of this size can interact with each other in the same way fat globules do in the mouth and therefore create a superior mouthfeel.

### Key Attributes

#### Sensory

- Superior mouthfeel – promotes creaminess and smoothness.

#### Appearance and Physical Properties

- Provides a softening effect and tenderness in cheeses.
- Contributes to opacity and is ideal for volutes and cream-based sauces.
- Promotes aeration in frozen dairy, ice creams and powdered mixes.

#### Stability (Compared to non-microparticulated WPC products)

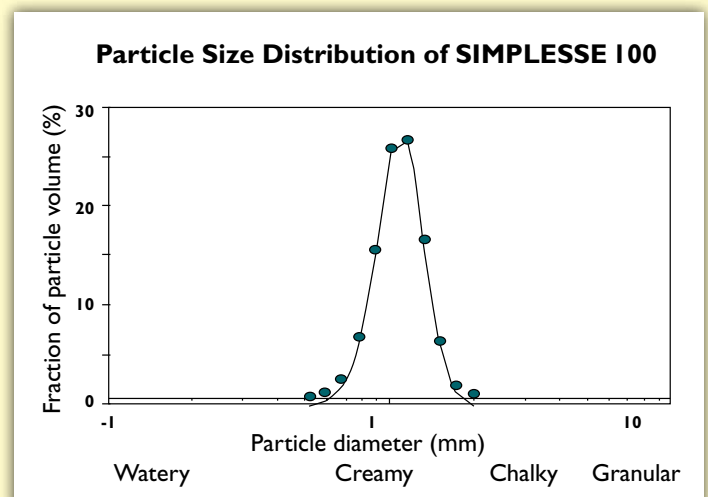
- Enhanced foaming in cachet cappuccino coffee drinks.
- Can be used in UHT systems.
- Freeze-thaw stability ideal for ice cream.

### Versatile, Easy to Use & Process Friendly

SIMPLESSE is a free-flowing powder with a mild dairy taste and is readily rehydrated with no special processing required.

The multifunctional nature of the SIMPLESSE microparticles, together with an 18 month shelf-life, allows them to be widely used in a variety of food and beverage applications.

SIMPLESSE is a dairy ingredient and can be labeled as "whey protein concentrate", "modified milk ingredient", "milk protein", or "dairy protein"; dependent upon regional requirements.



...you can

## SIMPLESSE® Products at a Glance

GRADE	Applications	Functional Value	% PROTEIN
<b>SIMPLESSE® 100</b> (Pure)	Desserts, Cheese, Creamers, Beverages Best in low-fat and fat-free applications	Creaminess, smoothness, superior mouthfeel, stability, softening effect, tenderness (in cheese), opacity	53
<b>SIMPLESSE® CC</b> (Combination – KELTROL® Xanthan Gum added)	Dressings, Soups, Sauces Best in full-fat applications	Opacity, creaminess, superior mouthfeel, enhanced emulsion and stabilization under varying temperatures	40

## Best Choices and Application Opportunities



### Beverages

Due to the consistency and size of the microparticles, SIMPLESSE behaves similarly to emulsified oil droplets in terms of mouthfeel and light scattering. This characteristic allows SIMPLESSE to be used in low-sugar/low-calorie drinks, as well as low-fat and full-fat drinks, to add mouth feel, creaminess, and opacity without the negative impacts of fat.

SIMPLESSE can be applied to: dairy based drinks, powdered drinks, lattes, chocolate drinks, bar mixes, coffee, milkshakes, cream based liquors, meal replacement, acidified milk drinks.

**Recommended Use Levels:**  
SIMPLESSE 100: 0.5%-2.0%



### Dressings, Sauces, Soups

**Full, Low and Reduced-Fat**

SIMPLESSE, when used in spoonable and pourable dressings, enhances emulsification and stabilization. It complements xanthan gum and other hydrocolloids by acting as the dispersed phase. In this role, SIMPLESSE provided extra creaminess, opacity and mouthfeel.

When used in sauces and soups, SIMPLESSE maintains emulsion stability and contributes creaminess, mouthfeel and opacity in products processed under temperature variations like UHT.

SIMPLESSE can be applied to: cream based soups and sauces, béchamel/hollandaise sauce, dairy based sauces, volutes, and powdered mixes.

CP Kelco has developed significant expertise in the use of SIMPLESSE and KELTROL® to provide superior texturizing systems.

**Recommended Use Levels:**  
SIMPLESSE CC: 1.0%-2.0%

KELTROL® Xanthan Gum:  
0.15%-1.0%



### Desserts

**Full, Low and Reduced-Fat**

SIMPLESSE enhances creaminess and facilitates both aeration and stability.

SIMPLESSE can be applied to: frozen dairy, ice creams, crème brulee, crème caramel, flan and powdered mixes.

In order to meet FDA/NLEA regulations, fortification with vitamin A is required.

Adding SIMPLESSE provides freeze/thaw stability, and can be used in both dairy and non-dairy formulations.

**Recommended Use Levels:**  
SIMPLESSE 100: 1.0%-4.0% dry



### Cheese

**Full, Low and Reduced Fat**

SIMPLESSE® microparticles, when used in processed cheese, are quantitatively entrapped in the developing casein curd. The ability to uniformly distribute the water load throughout the casein matrix has a softening effect, without leaving "hot spots" in the cheese which allow excessive ripening and resulting short body.

The SIMPLESSE microparticles themselves are not broken down by the ripening enzymes and remain functional throughout the cheese lifetime. The capture of the microparticles also contributes important yield increases in many cases.

SIMPLESSE can be applied to: processed, cottage, spreadable and traditional cheese.

Adding 0.5-2.0% SIMPLESSE to the cheese milk can result in a 5-20% increase in yield due to fat and moisture stabilization affect in the casein curd.

**Recommended Use Levels:**  
**Reduced-Fat Cheese:**  
SIMPLESSE 100: 0.5-1.5%

**Processed Cheese:**  
SIMPLESSE 100: 1.0-2.0%



### Creamers

**Full, Low and Reduced-Fat**

SIMPLESSE, in combination with other ingredients, when used in dairy and non-dairy creamers, can be used to manufacture fat-free, low-fat and light creamers that have whitening, viscosity, mouthfeel and flavor that is comparable to full-fat commercial products.

As a dairy ingredient, SIMPLESSE provides a clean base upon which to build a good creamer flavor.

Use conventional equipment and processing.

**Recommended Use Levels:**  
SIMPLESSE 100: 1.0%

# SIMPLESSE® Microparticulated Whey Protein Concentrate in Food & Beverages

(4-Square Value Determination Process)

SQUARE 1: Ingredient Costs	SQUARE 2: Preparation	SQUARE 3: Productivity	SQUARE 4: Quality
<i>Raw material, Logistics, Transport, Storage</i>	<i>Preparation, Batch Prep, Ingredients Combination</i>	<i>Equipment, Filling Operation, Performance</i>	<i>Finished Product Consumer Benefits</i>
<ul style="list-style-type: none"> <li>• Long shelf life</li> <li>• Manufacturing capability in multiple geographic locations</li> <li>• No special label requirements (outside of normal dairy disclosure)</li> <li>• Packaged in sealed bags, shrink wrapped on pallets for allergen control</li> </ul>	<ul style="list-style-type: none"> <li>• No change to ordinary/current processing methods</li> <li>• SIMPLESSE CC can be used in ready-to-use stabilizing systems</li> <li>• No special equipment is needed to incorporate SIMPLESSE</li> <li>• Partial fat replacement at low concentration</li> <li>• Compatible with other hydrocolloids, SIMPLESSE enhances functionality</li> </ul>	<ul style="list-style-type: none"> <li>• Fast hydration</li> <li>• Can reduce processing time due to ease of use</li> <li>• Can increase cheese yields</li> </ul>	<ul style="list-style-type: none"> <li>• Sensory attributes, rich mouthfeel</li> <li>• Improved appearance, milky/creaminess</li> <li>• Enhances whiteness in dairy products</li> <li>• Enhances stability</li> </ul>
Ready for Preparation	Combined Intermediate Batch	Processing and Filling	Finished Product Sale
<b>VALUE DELIVERY</b>			

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