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USDEC News

June 2007

U.S. Shines Again at World Cheese Awards

A variety of U.S. cheeses earned praise – and medals – from judges at the World Cheese Awards (WCA) in London this spring. In all, 23 U.S. artisan cheese makers earned 42 medals – 13 gold, 17 silver and 12 bronze.

The United States proved its strength in the cheddar and mozzarella categories, winning 14 medals between the two. Significantly, *Bandage Wrapped Extra Mature*, an aged cheddar from Fiscalini Cheese Co., Modesto, California, won the Wyke Farms Trophy for the show’s “Best Extra Mature Traditional Cheddar.”

“This is a major coup for Fiscalini. It is the first time ever that an overseas cheddar has won this class or trophy,” says Bob Farrand of the UK Cheese Guild, and chairman of the contest.

“To be able to go into Britain, where cheddar has been produced for hundreds of years, and claim top honors for U.S. cheddar, is a testament to the skill and craftsmanship of our specialty cheese artisans,” says Marc A.H. Beck, senior vice president of marketing for the U.S. Dairy Export Council (USDEC), one of the contest sponsors.

Over the last five years, USDEC participation at the World Cheese Awards has helped elevate the profile of U.S. specialty cheese makers.

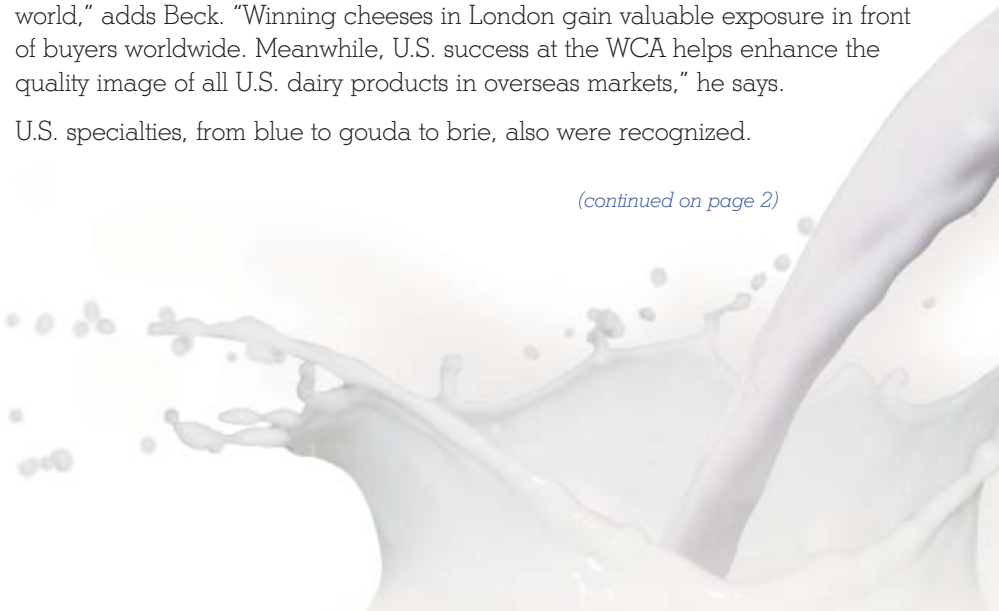
“Trend-setting chefs and consumers from inside and outside of Europe have taken notice that U.S. cheese factories make some of the best delicacies in the world,” adds Beck. “Winning cheeses in London gain valuable exposure in front of buyers worldwide. Meanwhile, U.S. success at the WCA helps enhance the quality image of all U.S. dairy products in overseas markets,” he says.

U.S. specialties, from blue to gouda to brie, also were recognized.

(continued on page 2)

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(continued from cover editorial)



"When cheese buyers from around the world see the accolades we receive year after year at this prestigious contest, they understand that U.S. cheese is as good as or better than cheese produced anywhere," says Beck.

Marin French Gold, a triple crème brie made by Marin French Cheese Co., Petaluma, California, won the USDEC Trophy as the "Best U.S. Cows' Milk Cheese."

Previous winners of the USDEC Trophy include *Stravecchio Parmesan*, Antigo Cheese Co., Antigo, Wisconsin; *Smoked Oregon Blue* and *Rogue River Blue*, The Rogue

Creamery, Central Point, Oregon; and *Rustic Blue*, Bingham Hill Cheese, Fort Collins, Colorado.



For more information about the WCA results please see our website <http://www.usdec.org/Products/CheeseSpecs/content.cfm?ItemNumber=1861&token=39674&userID=1837>

U.S. Performance at the World Cheese Awards

Year	Total U.S. Entries	Winning Companies	Total U.S. Medals	Gold	Silver	Bronze
2007	249, from 51 companies	23	42	13	17	12
2006	199, from 34 companies	23	43	12	14	17
2005	149, from 29 companies	16	36	12	11	13
2004	226, from 53 companies	23	44	15	15	14
2003	67, from 25 companies	18	18	2	7	9

USDEC News is published by the U.S. Dairy Export Council (USDEC) and is designed to provide up to date information about the U.S. dairy industry for the benefits of our international partners.

USDEC was formed by Dairy Management Inc. in 1995 to enhance the U.S. dairy industry's ability to serve international markets. USDEC is an independent non-profit membership organization representing dairy processors, exporters, milk producers and industry suppliers.

USDEC supports international buyers of dairy products by providing information about U.S. suppliers, their products and capabilities. We bring buyers and sellers together through conferences, trade missions and trade shows. USDEC furnishes application and usage ideas for U.S. dairy ingredients through seminars, one-on-one consultations and technical publications. We assist with foodservice promotions, menu development and education. We also work with local authorities to resolve market access issues that ensure reliable delivery for customers and importers. When you work with USDEC and its members, you are partnering with companies that manufacture and export more than 85% of all U.S. dairy products.

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Managing Through Times of Tight Supply

The global dairy industry has undergone a radical shift over the past year. With raging world demand for dairy proteins, constricted supplies and no stocks of milk powder to fall back on, international prices of dairy ingredients have skyrocketed to record levels.

Though it is the world's single largest cow's milk producer, the United States has not been immune to this tightness. Milk production in the first quarter of 2007 increased less than 1% compared with a year ago. Meanwhile, output of nonfat dry milk/skim milk powder was down 19%, dry whey up just 2% and whey protein concentrate down 11%.

In this environment, U.S. suppliers are demonstrating a commitment to serving their long-term accounts.

"Overseas customers want consistent supply," says Dermot Carey, vice president of ingredients, Danisco Inc., Seattle, Washington. "To be successful, it's necessary to build long-term rela-

tionships and continue to serve our strategic overseas customers, even when supply gets short."

For International Ingredient Corp. (IIC), St. Louis, Missouri, continuity of supply is key.

"We're trying to take care of our existing customers," says Jim Sullivan, president of IIC. "We're taking a long-term approach. It's taken us many years to build that loyalty from our customers and we don't want to lose that," he says.

This year, continuity means balancing product availability to customers demands.

"We treat domestic and international customers equally," says Gabriel Sevilla, vice president of international sales, Dairy Farmers of America, Kansas City, Missouri. "We will continue to supply them based on historical volumes. Some of our customers we've had for 20 years or more, so our long-term relationships are important."

U.S. suppliers also are helping customers manage through this period of record-high commodity prices.

"We share information about the U.S. market, and try to help our overseas customers understand how the U.S. pricing system works," says Sevilla. "That also means letting customers know in advance what we expect to happen so they can prepare ahead of time."

"We're doing everything we can to keep prices reasonable. We are sympathetic to the high prices that buyers are now facing," adds Sullivan.

"Dairy is a cyclical business," warns Matt McKnight, vice president of export ingredients marketing and industry affairs for the U.S. Dairy Export Council. "It makes business sense to take care of your good customers during times of tight supply, because those will be your best customers when the markets turn."

More from USDEC

USDEC Has a New Publication



U.S. Whey Ingredients in Nutrition Bars and Gels

A monograph designed to educate users of whey ingredients in nutrition bar and gel applications. Includes information on: types of nutritional bars, processing, ingredients, formulations, nutrient fortification, coatings; and presents whey protein functions in gel-type products. Available in English.

In the News...

New Plants and Upgrades

- **Davisco Foods** will invest \$10 million to expand capacity of its Lake Norden, South Dakota, cheese plant by 50%. The plant will boost throughput to 2,040 metric tons of milk per day with the addition of UF-membrane capabilities. New lactose drying equipment also is being installed. Davisco's five plants produce more than 450 metric tons of cheese daily.
- **YoCream International** expanded its Portland, Oregon, frozen-dessert plant by 38%, bringing total area up to 2,044 square meters. The facility can now hold 1,600 metric tons of finished goods and ingredients, and has additional blast-freeze capability.
- **Ben & Jerry's** will open a production line in a Henderson, Nevada, plant owned by parent company Unilever. Rather than ship across the country, the company will serve Western retail markets from the Henderson plant, cutting transportation costs and CO₂ emissions, Ben & Jerry's says.
- **Fiscalini Cheese Co.**, winner of three medals at the recent World Cheese Awards, plus a trophy for the best extra mature traditional cheddar, applied for permits to increase capacity at its Modesto, California, plant ten-fold. The expanded 7,600-square-meter operation would include more space for cheese making, packaging and storage, plus a new visitors' center.

New Products

- **Cadbury Schweppes** will introduce *Accelerade* sports drink made with whey protein isolate. Each 0.6-liter bottle contains 4 grams of WPI. The product will be supported by a \$50-million marketing campaign, with ads touting whey proteins' functionality in boosting endurance.

Moves and Consolidations

- **Kraft Foods** will close its Lehigh, Pennsylvania, processed cheese line and consolidate operations among three Midwestern plants by summer 2008. The plant makes individually wrapped Kraft Singles and other processed cheese products.
- **Dairy Farmers of America (DFA)** will idle its Lovington, New Mexico, cheese plant, a little more than a year after the opening of Southwest Cheese Co. in nearby Clovis. The Lovington plant, which employed 61, produced 18,000 metric tons of cheddar blocks annually. Production will be shifted to DFA facilities in California and Minnesota.
- **Alto Dairy** closed its Black Creek, Wisconsin, liquid feed division on May 11.
- **Kemps Foods**, a subsidiary of HP Hood, will close its Gillette Dairy milk plant in Rapid City, South Dakota, June 1. Production will be consolidated at the other four Kemps facilities in the region.
- **Marathon Cheese Corp.**, one of the nation's largest cheese processors and packagers, closed its Cloverbelt Cheese plant near Edgar, Wisconsin. Marathon opened a new cut-and-wrap operation in Mountain Home, Idaho, in January.
- **Crowley Foods**, a subsidiary of HP Hood, is closing its Albany, New York, fluid milk operation and moving production to its headquarters plant in Binghamton, New York, and a facility in Agawam, Massachusetts.

Acquisitions and Mergers

- **J.M. Smucker Co.** will acquire Eagle Family Food Holdings, the manufacturer of Borden's Eagle brand sweetened condensed and evaporated milk, for \$248 million in cash and assumed debt. Eagle posted sales of \$206 million last year.
- **Dean Foods** will expand its cultured products capabilities with the purchase of Friendship Dairies for \$130 million. Dean plans to leave the existing management, workforce and brand in place. Friendship, a 90-year-old company based in Long Island, New York, gets milk from about 100 farmers.
- **International Food Products Group**, a six-year-old collection of specialty food companies based in Newport Beach, California, signed a letter of intent to purchase an unnamed cheese processing company in the western United States. The target company had \$18 million in sales last year, up 50% from the prior year, IFPG says.
- **Prairie Farms Dairy** will acquire LuVel Dairy Products, a small, 88-year-old milk and ice cream company based in Kosciusko, Mississippi. Existing management will continue to run the plant, and the LuVel brand will remain.
- Swiss dairy group **Emmi** continued its investment in the U.S. market with the acquisition of Contract Aseptic and Specialty Packaging (CASP), a co-packer of aseptic dairy products. Earlier Emmi acquired Upstate Farms Cooperative and a stake in specialty cheese maker Roth Käse.

U.S. Specialty Cheeses

A World of Special Cheeses Made in the USA

Cheese continues to grow in popularity in the U.S., and specialty cheese categories lead the way. Whether they are specialty, farmstead, organic or artisan cheeses, U.S. cheese makers now produce thousands of special and unique cheeses reflecting their own heritage, traditions and cheese making innovations. There are so many varieties that the choice can be overwhelming. Here are some definitions and guidelines that will help clarify these cheese categories and the types of cheeses they include.

What are Specialty Cheeses?

The word “specialty” is an umbrella term often used to describe a variety of cheeses including American Originals, artisan, farmstead, and organic cheeses. Specialty cheeses are of more limited production than commodity cheeses, which are produced in mass quantities in large mechanized production facilities. They require particular attention to flavor, texture and overall quality, and are often aged or cured in special ways. Specialty cheese producers vary greatly in size.

The word “specialty” denotes cheese that is unique in some way with value-added components that command a premium price. Special packaging for snack cheeses, and convenient forms of sliced, shredded, and grated cheese are value-added components sometimes



associated with specialty cheese. Special requirements in the make procedures, as in Kosher and Halal cheeses, or requirements regarding origins also bring cheese into the specialty cheese category.

Specialty cheeses are typically well-aged, full-flavored, or unique in some way. Examples of specialty cheeses include:

- Aged cheddar (2–10 years)
- Highly perishable soft-fresh cheeses (teleme jack, crescenza)
- Cream fortified cheeses (havarti, 60% brie, triple cream brie, mascarpone)
- Brie and soft-ripened cheeses (Les Frères)
- Washed-rind cheeses (brick, gruyère)
- Blue cheeses (blue, gorgonzola, soft-ripened blue)
- Well-aged hard cheeses (asiago, parmesan, pepato)
- Blended milks with combinations of cow, goat, and sheep milk
- Naturally smoked cheeses (blue, cheddar, gouda, swiss)
- Natural cheese varieties and cheese spreads with fruits, nuts, peppers, spices (monterey jack with jalapeno)
- Limited production American Originals (monterey dry jack, surface ripened brick, mild & aged colby)

American Originals

American Originals are cheeses which originated in the United States. However, for marketing purposes, this term may also refer to European-style cheeses like a blue or a gouda that are uniquely crafted and named by American cheese makers. Over the years some American Originals became so popular that many are now produced



as commodity cheese. Many are still made in limited production and considered specialty cheeses. With the new popularity of specialty cheeses there are hundreds of new unique and original American cheeses being produced all over the U.S.

The most popular and well-known *American Originals* include:

- Baby swiss
- Brick
- Colby
- Cream cheese
- Monterey jack
- Low-moisture mozzarella

Hundreds of new and unique American Originals are produced regionally. Some examples include:

- American Grana
- Beecher’s Flagship
- Gran Canaria
- Gran Queso
- Vintage Van Gogh
- Smokey Blue
- Oregonzola
- Virgin Pine Native Blue
- Les Frères
- San Joaquin Gold



Artisan or Artisanal

The word “artisan” or “artisanal” implies that a cheese is produced primarily by hand, in small batches, with particular attention paid to the tradition of the cheese maker’s art, and thus using as little mechanization as possible. Artisanal cheeses typically require special aging or curing techniques. They may also include various flavorings.

Most artisanal cheeses are produced in very small quantities, and often sold in the region where they are made, directly to retailers and chefs. This trend has reinforced a resurgence of regional trends, regional foods, with hundreds of unique cheeses produced in specific regions around the U.S. Examples of *artisanal* producers include:

- Beecher’s Handmade Cheese
- Carr Valley Cheese Co.
- Fiscalini Cheese Co.
- Marin French Cheese Co.
- The Rogue Creamery
- Vella Cheese

Farmstead

Unlike other specialty cheese categories, farmstead cheese has a clear definition. In order for a cheese to be classified as “farmstead”, the cheese must be made with milk from the farmer’s own herd, or flock, on the farm where the animals are raised. Milk used in the production of farmstead cheeses may not be obtained from any outside source. Farmstead cheeses may include various flavorings.

Examples of *farmstead* cheese producers include:

- Bellwether Farms
- Crave Brothers Farmstead Cheese
- Fiscalini Cheese Co.
- Point Reyes Farmstead Cheese Co.
- Uplands Cheese Company

Organic

Organic foods sales in the U.S. have grown tremendously, and organic cheese is a big part of that business. The process for certifying a farm or milk source as “organic” follows federal

guidelines and often takes years before the certification is complete. Organic cheese production must follow strict guidelines that closely monitor the way the land is farmed and what the animals are fed. These guidelines also dictate that the milk and any other ingredients used in the manufacture of cheese are certified as organic. Examples of *organic* cheese producers include:

- Neighborly Farms
- Uplands Farms
- Organic Valley Cheese Co.
- Kickapoo Dairy

Sharing our Treasures with the World

The secret is out, and the world has taken notice of the unique, special, top quality and award winning cheeses crafted in the United States. In fact, many U.S. specialty cheeses are now being exported to markets around the world. You will find them in some of the finest stores and restaurants worldwide. For more information, please contact USDEC.



Specialty Cheeses and Cheese Makers' Profiles

There are hundreds of specialty cheese makers in the United States and it would be therefore difficult to profile every one of them. Therefore, in this edition we feature two companies and cheese makers that are good examples of the craftsmanship, variety and high quality cheeses the U.S. industry has to offer.

The Rogue Creamery

Cheese makers/Owners: David Gremmels and Cary Bryant

Company: The Rogue Creamery

Location: Central Point, Oregon

Star Cheeses: *Rogue River Blue*
Crater Lake Blue
Oregon Blue

Thomas Vella emigrated from Italy to the U.S. in the 1920s and opened the Rogue Creamery in 1935. Tom Vella's son, Ignacio, began to turn over operations to two young cheese makers named David Gremmels and Cary Bryant. With Ig's tutoring and their innovations, they turned The Rogue Creamery into one of the premier artisan cheese companies in the U.S. The varied and exquisite cheeses they produce in Central Point, Oregon are perfect examples of artisan products at their best. The cheeses they make reflect the artistry of their cheese makers, and a link to their surroundings or "terroir." All the milk for their cheese comes from one local dairy dedicated to sustainable agricultural and organic products. Their cheeses are made in small batches, the process being closely monitored at every stage. Every process is done by hand, from the making all the way down to the final packaging.

Rogue River Blue is a very special cheese and a perfect example of terroir or link to the surroundings combined with craftsmanship. The cheese is made in small quantities for a brief period in the fall of each year.

The blue mold is cultured from a mold indigenous to Oregon. After the blue cheese is made, it is wrapped in grape leaves that have been hand picked and marinated in a pear brandy or "Eau De Vie" made from the famous pears of Oregon. After it is wrapped, it is hand tied with raffia.

At the 2003 World Cheese Awards in London, *Rogue River Blue* made history. Competing with blue cheeses from all over the world, it was awarded a gold medal and the title of Best Blue in this competition. This was the first time an American blue cheese ever won this international competition.



Carr Valley Cheese

Cheese maker/Owner: Sid Cook

Company: Carr Valley Cheese

Location: La Valle, Wisconsin

Star Cheeses: *Virgin Pine Native Blue*
Red Spruce 10 Year Cheddar
Gran Canaria
Cave Aged Cardona

Carr Valley Cheese is over 100 years old, and is one of America's finest specialty cheese plants, producing traditional classics like well-aged cheddars as well as almost 50 different American Originals. Sid Cook is the owner and Master Cheese Maker for Carr Valley Cheese. He is a fourth generation cheese maker and one of a small handful of cheese makers accorded the title of Master Cheese Maker in the United States. Master Cheese Maker is a distinction awarded only to veteran Wisconsin cheese makers who complete rigorous 15-year combined apprenticeship along with advanced training and education programs.

In the past five years alone, Sid Cook and his cheeses from Carr Valley Cheese have won more than 120 top awards in national and international competitions – more than any other cheese or cheese maker in recorded history. Many of these awards are for Sid's one-of-a-kind American Originals.

Virgin Pine Native Blue is named, in part, from the natural stands of old virgin pine trees that dot the forests and surrounding caves near La Valle, Wisconsin, where the cheeses are cured. The cheese is a firm-body cheese that is naturally bandaged in cheesecloth and cured in natural caves. Unlike other blue cheeses, which have mold spores added to the milk, *Virgin Pine Native Blue* has no spores added to the milk or cheese. After it matures, the cheese is pierced with needles, allowing natural molds from the cave to penetrate the cheese, yielding an earthy and distinctive flavor.

Milk Powders: The Perfect Ingredient from the Perfect Food

Milk is the perfect food – nutrient dense and highly functional as an ingredient. Milk powders, in turn, are the perfect food made portable. By removing the moisture from milk, the powders become not only easy to transport but also shelf-stable for long-term use and storage. Milk powders can be readily reconstituted when fresh milk supplies are low or when fresh milk is unavailable or impractical to obtain. They are suitable for use as an ingredient to play a functional role or to boost the nutritional value of a variety of food and beverage formulations.

Skimmed milk powder (SMP) offers users a cost-effective source of dairy nutrition and functionality. SMP is produced by removing the water from pasteurized skimmed milk, most commonly through a spray drying process where concentrated milk is atomized through a pressure nozzle or centrifugal disc into a hot air stream (180–200°C). Spray drying creates SMP with excellent solubility, flavor and color. These spray dried powders



are available in two forms – ordinary or non-agglomerated (non-instant) and agglomerated (instant).

SMPs are classified for use as an ingredient according to the heat treatment used in the manufacturing process: high heat, medium heat and low heat. The heat treatment applied to the milk before drying influences the functionality of the

resulting milk powder. The whey protein nitrogen index (WPNI) indicates the degree of heat denaturation of the whey proteins during processing. A high-heat SMP will have a WPNI of less than 1.5 mg/g, a medium-heat SMP will be in the 1.5–6 mg/g range and a low-heat SMP will have a WPNI of not less than 6 mg/g.

Heat classification is an important tool for the selection of the optimal SMP for a particular application. In bakery applications, for example, the use of high-heat powder allows for good loaf volume in breads. In dairy foods and beverages, a low-heat powder helps to optimize sensory properties.

Quality and Quantity

Globally in 2006 the U.S. was the second largest producer of SMP, after the EU, and second largest exporter of SMP – exporting more than 292,000 MT. The U.S. manufacturers have access to a readily available and abundant milk supply. The industry incorporates advanced in tech-

Nonfat Dry Milk & Skimmed Milk Powder

While often referred to interchangeably, nonfat dry milk and skimmed milk powder are defined by two different sets of regulators/authorities.

Nonfat dry milk (NDM), as described by the U.S. Food & Drug Administration’s Code of Federal Regulations, is obtained by removing only water from pasteurized skimmed milk. It contains not more than 5% by weight of moisture, and not more than 1.5% by weight of milkfat.

Skimmed milk powder (SMP), as defined by the international Codex Alimentarius, is a milk product that can be obtained by the partial removal of water from milk. The fat and/or protein content of the milk may have been adjusted, only to comply with the compositional requirements, by the addition and/or withdrawal of milk constituents in such a way as not to alter the whey protein to casein ratio of the milk being adjusted. Codex sets compositional criteria for skimmed milk powder as a maximum milkfat content of 1.5% (m/m), maximum water content of 5% (m/m) and minimum protein content in solids milk nonfat of 34% (m/m). The Codex standard also makes provisions for the use of additives such as stabilizers, firming agents, acidity regulators, emulsifiers, anti-caking agents and antioxidants.

Similar distinctions can be made for dry whole milk and whole milk powder, the latter being the Codex regulated product with a minimum protein content in solids milk nonfat of 34% (m/m).

Typical Composition of NDM and SMP

Nutrients	Typical Composition (%)
Protein	34.0 – 37.0
Lactose	49.0 – 52.0
Fat	0.6 – 1.25
Ash	8.0 – 8.6
Moisture	3.0 – 4.0 (non-instant) 3.5 – 4.5 (instant)

nologies to ensure efficient collection and delivery of the highest quality milk and milk products. The U.S. has strict food sanitary standards and dairy is one of its most heavily regulated industries.

U.S. milk powders are made from high quality milk in federally approved manufacturing facilities. Dairy farmers are regularly visited by government regulatory agencies, which conduct quality assurance and safety inspections. Each tanker of milk is tested at the processing facility to be sure it is negative for residual antibiotics prior to unloading. Milk at the processing level moves through sanitized pipes, vats and tanks as it is converted to a variety of dairy foods, including milk powders.

The U.S. has adopted internationally recognized standards for testing milk powders to assure uniformity, facilitate purchase and reduce risk. U.S. suppliers voluntarily participate in the U.S. standards for milk powder grading system operated by the U.S. Department of Agriculture.

SMP is traditionally packaged in stitched or glued, multiwall kraft bags with a polyethylene inner liner. No staples or metal fasteners are used. Packaging also is available in plastic-lined corrugated paperboard or aluminum tote bins. Customized packaging can be created including moisture-resistant packaging for tropical climates.

Storage life for SMP depends upon shipping and storage conditions. When shipped and stored in a cool dry environment, with temperatures less than 27°C and relative humidity less than 65%, non-instant SMP is good for

12–18 months and instant SMP is good for 6–12 months.

Many Uses, Many Benefits

SMP is a highly versatile ingredient popular with food developers because it delivers nutritional and functional benefits. SMPs can increase a product's nutritional profile by delivering high quality proteins, lactose, calcium and other nutrients. Functionally, they provide mouthfeel, upgrade visual appearance and enhance flavor profiles.

The largest application of milk powders is in dairy foods and recombined milk products where a combination of powders – SMP, whole milk powder and buttermilk powder – is often used. The benefit to food developers and manufacturers is a year-round, easily stored milk supply. Recombined milk is also useful in cases where the milk supply is insufficient to meet population demands or when seasonal changes affect milk production. Applications include milk,

cheese and cultured products as well as evaporated milk, sweetened condensed milk, beverage mixes and ice cream.

SMP is also used in bakery formulations, where foams improve structure and texture of baked goods like cakes and muffins, and browning in the baking process enhances appearance.

Applications include cakes, cookies, croissants, doughnuts, muffins and scones. In confections, milk powders are important in creating milk chocolate candy, nougats, frosting and creams.

The firm, chewy texture of many confections can be attributed to the binding of water by casein. SMP is used in caramel, chocolate candy coating, icing/fudge and frosting.

In meat products, SMP contributes to the creation of structural support through gelation. Water-binding properties can reduce production costs and improve sensory perception. Milk powders also enhance the flavor of meat products. Formulations include bologna, corned

Selection of SMP Heat Treatment for Recombined Milk Products

Application	Type of SMP	Benefit
Pasteurized recombined milk	Low-heat or medium-heat High-heat	Will yield the freshest flavor. When a “cooked” flavor is desirable.
Extended shelf life milk (ESL)	Low-heat or medium-heat High-heat	Will yield the freshest flavor. When a “cooked” flavor is desirable.
UHT Milk	Low-heat or medium-heat	To preserve flavor and prevent fouling in the plant.
Recombined evaporated milk	Low-heat or medium-heat	Recommended for continuous flow processes.
Recombined sweetened condensed milk	Medium-heat or low-heat	Viscosity of the final product is related to the heat treatment (increases with heat treatment applied) but other factors can strongly influence this general rule (protein content, minerals, etc.). Consult supplier for advice.
Blended products (containing whey, vegetable fat)	Low-heat to medium-heat	Viscosity is controlled with hydrocolloids, mineral control, and other means
Cultured milks	Low-heat, medium-heat or high-heat	Heat treatment of the yogurt milk before fermentation may be reduced when using high-heat milk powder.
Fresh cheeses	Low-heat, medium-heat or high-heat	Adjust process as a function of milk powder selected.
Other cheeses	Low-heat	Milk standardization and cheese milk extension is the most common manufacture practice.



SMP Applications, Benefits and Usage Recommendations

Applications	Functional Benefits	Nutritional Benefits	SMP Recommended
Dairy: dairy drinks, fluid milk, cultured milk, yogurt, kefir, quark, koumiss, soft fresh cheese	Source of dairy solids, stabilizes, gels, binds water, enhances flavor and aroma	Increases protein and calcium density	Low- to medium-heat SMP
Nutritional products: infant formulas, drink mixes, nutrition bars and cereal mixes	Stabilizes beverages and emulsions, increases opacity, binds ingredients	Source of high quality protein, calcium, magnesium, phosphorus and bioactive components	Low-heat SMP, instant SMP
Confectionery: chocolate coatings, caramel, icings, fillings	Flavor and color development, emulsification where applicable	Increases protein and calcium density	Medium-heat SMP
Processed foods: dry soup and sauce mixes, processed meat	Improves texture in processed or imitation meat, enhances texture, flavor and visual appeal in dry mixes (soup, sauces), can mask off-flavors	High lysine content complements plant protein, improves biological value, can significantly increase calcium content	Medium- to high-heat SMP
Baked goods: flat bread, naan, baking mixes, bread, biscuits, crackers, cakes, pastries, tortillas	Color and flavor development, increases appeal, improves texture, increases shelf life	High lysine content complements plant protein, improves biological value	High-heat SMP

beef loaf, salami, meat loaf and roast beef loaf.

SMP contributes nutritional, functional and economical benefits to beverages such as high-protein meal replacement beverage mixes and milk-based infant formulas.

For prepared foods such as dry mixes, salad dressings, sauces and soups, the powder form of SMP enables product developers to add dairy solids to formulations limited by moisture content.

Functional Properties of SMP

Emulsification: The proteins in SMPs can successfully act at oil/water interfaces to form and stabilize emulsions for improved product appearance and an appealing ingredient label.



Gelation: Undenatured dairy proteins have the ability to form rigid, heat-induced irreversible gels that hold water and fat and provide structural support. In addition to improved mouthfeel, this helps to create the creamy, smooth texture of fat in lower-fat food products.

Water Binding and Viscosity Building:

Under specific conditions, protein molecules unfold to form a gel, and the three-dimensional structure of this gel can bind water. Functionally, this can provide fat-like attributes, allowing for a reduction in fat content. It also provides for water retention (and reduced product costs), increased viscosity and improved product texture.

Whipping/Foaming: Surface-active properties of milk proteins create and stabilize gas bubbles in a liquid – helping to maintain foam stability and improve whip volume. This enhances visual appeal and provides structure and texture.

Browning/Color: Milk powders contribute to browning when the protein and reducing sugar lactose undergo Maillard browning. This process lends an appealing color to baked goods and sauces. Milk powders also contribute a creamy, dairy color and opacity to dairy foods.

Flavor/Aroma: Dairy proteins are traditionally bland and don't contribute foreign or off flavors to foods. During the

heat process, lactose present in milk powders reacts with dairy proteins leading to the production of different flavors. Milkfat present in milk powders provides creamy, dairy notes and richness. It also acts as a flavor carrier for fat-soluble ingredients, spices, herbs and sweet flavors. Milkfat has a low melting point, which ensures even flavor distribution.

Delivered Where Needed, As Needed

The U.S. is a safe and consistent global supplier of SMPs. In most formulations, one product won't serve every need. Some buyers will require different levels of protein to achieve different functional benefits. U.S. powder manufacturers understand the expectations and changing needs of the market and can produce and supply finished products tailored to the exact requirements of the buyer, including religious certification when necessary.

For more information about U.S. milk powders, see the "Reference Manual for U.S. Milk Powders – 2005 Revised Edition" on our website. Link address: http://www.usdec.org/Files/Publications/MilkPowdersManual/USMKP-DR_00.pdf

Dairy Consumption in Youth Linked to Improved Bone Health During Aging

Research continues to link dairy product calcium with critical health benefits including overall bone health and the prevention of osteoporosis. Achieving maximum bone mass early in life is important because bone mass begins to decline as part of the aging process. Older adults with low bone mass are at risk for osteoporosis, a chronic disease in which the density and quality of bone is reduced, increasing the risk for bone fractures.

Osteoporosis affects over 77 million people in Europe, Japan, Australia and the United States and is one of the world's most common and debilitating diseases. It is often referred to as a "silent disease" as there are usually no symptoms until a fracture occurs. According to the International Osteoporosis Foundation (IOF), osteoporosis affects more than one in three women and one in five men around the world. They predict that 50% of the osteoporotic hip fractures will occur in Asia by the year 2050.

Osteoporosis is a socioeconomic burden and in many countries, fractures caused by osteoporosis are responsible for more days of hospitalization among women over 45 years of age than any other disease. Osteoporosis and the fractures associated with it are a major public health concern because of related morbidity and disability, diminished quality of life, and mortality.

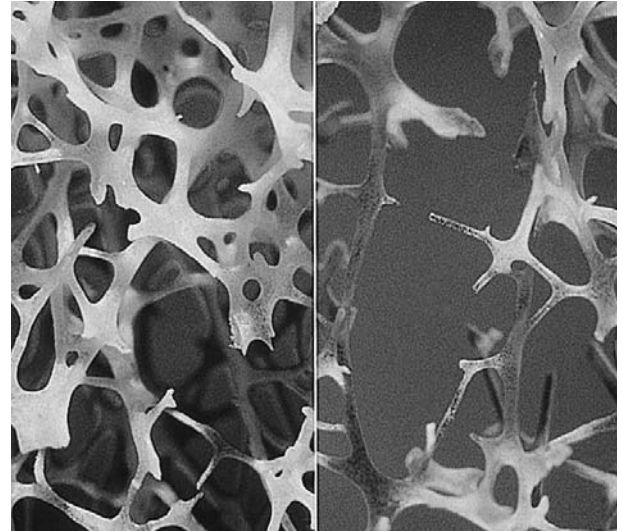
Calcium is Critical

Osteoporosis may be prevented with proper nutrition and exercise. Actions as children, teens and young adults will reduce bone fractures later in life. Calcium intake and exercise are key in the battle against osteoporosis by initially helping to build bones and then later to help stem bone mass loss and reduce osteoporosis risk. Milk and other dairy products are calcium-dense foods that provide approximately 300 mg of calcium per serving (i.e. 240 ml of milk, 170

grams of yogurt, and 175 grams of cheese). These foods also contain other nutrients important for bone health such as vitamin D (if fortified), phosphorus, protein, potassium, magnesium, and zinc. Calcium however, receives the most acclaim for building and maintaining bones.

Calcium is the most abundant mineral in the body and approximately 99% of total body calcium is found in the skeleton. In addition to its role in maintaining bone health, calcium is also involved in a number of important metabolic processes. The amount of bone accumulated during growth is related to the amount of calcium consumed. Studies in children and adolescents find increased dairy foods or calcium intake not only increases peak bone mass and decreased osteoporosis risk, but also possibly reduces risk of childhood fractures.

Meeting calcium needs during adolescence is particularly important for bone health, as 40% of adult bone mass is accrued during the few short years of peak skeletal growth. Unfortunately, many children older than 8 years do not consume the recommended levels of calcium. The proportion of children consuming an adequate intake of calcium is lowest between the ages of 12 and 19 years, when accumulation of bone mineral peaks and the requirement for calcium is highest. Peak calcium accretion rates in bone occur at an average age of 12.5 years for girls and 14 years for boys. Genetics determine bone mass potential and it will only be attainable with proper calcium intake, good nutrition and regular exercise.



Enlargement of a normal bone vs. the more porous bone of an individual with osteoporosis.

Source: International Osteoporosis Foundation www.iofbonehealth.org.

A low intake of dairy products, including milk, cheese and yogurt, contributes to low calcium intake. Many factors influence children's and adolescents' dairy intake, including dieting and anorexia. The failure of children to meet calcium requirements in combination with a sedentary lifestyle in childhood can impede the achievement of maximal skeletal growth and bone mineralization, thereby increasing the diet-related risk of developing osteoporosis later in life. In adults this risk is further increased with smoking, alcohol consumption, menopause, and low body weight.

Lactose maldigestion may lead to restriction of dairy and calcium intake, and is more prevalent in children of African, American Indian and Asian descent than in Caucasian children. However, children with lactose intolerance should still consume dairy foods to gain the benefits of bone health and growth. Most children can tolerate aged cheeses such as cheddar or Swiss, yogurt with live active cultures milk and small amounts of milk (237ml) with meals without discomfort.



Daily Dairy Dose

To optimize health, the Food and Agricultural Organization of the United Nations (FAO) and the World Health Organization (WHO) recommend that both males and females, ages 19 to 50, consume 1,000 milligrams of calcium on a daily basis. The National Academy of Sciences recommends a daily calcium intake of 800 milligrams per day for children ages 4 to 8 and 1,300 milligrams per day for children and adolescents ages 9 to 18. In older individuals there is evidence that an increase in calcium intake, combined with vitamin D, helps prevent the risk of osteoporosis. Men ages 65 and older and women ages 51 and older should increase their daily calcium intake to 1,300 milligrams. Three to four daily servings of calcium rich dairy foods, such as low-fat milk, flavored milk, cheese or yogurt are recommended to help meet the daily targets.

To support overall skeletal growth and maintain later bone health, research shows that both youth and adults should combine good daily nutrition habits with regular weight-bearing exercise. Some studies demonstrate increasing calcium or dairy intake enhances positive effects of physical activity on bone mineral status during growth, however, additional research is necessary. Once established as routine, healthy lifestyle choices such as dairy consumption and exercise create a pattern that help maintain bone mass throughout life, reducing osteoporosis risks.

Various scientific studies support the critical role of dairy calcium in youth bone development and bone mineral density, as well as later bone health:

In young children, increasing calcium intake has been shown to increase bone mineral density. A recent six-year prospective study followed 151 Caucasian girls from age 5 to 11, and found increased calcium intake from dairy products at ages 7 and 9 positively impacted total body bone mineral content at age 11.¹

A recent meta-analysis of eight case-control studies found a positive association between low bone density and fractures in children. New Zealand children and adolescents ages 5 to 19 with repeated forearm fractures had lower bone mineral content and weighed more, two factors that increase fracture risk, compared to fracture-free children of the same age and gender. Previous research by these investigators showed an increased incidence of fractures in children who avoided milk.^{2,3,4}

Bone mineral content and bone mineral density were significantly increased in a study of 80 girls aged 12 years who consumed additional calcium (1,125 mg/day) compared to baseline calcium intake of 746 mg/day) in the form of whole or low-fat milk (two cups) for 18 months.⁵

A clinical study in 28 boys between 13 and 17 years of age found that increasing milk intake to three servings of 1% fluid milk daily favorably affected bone mineral responses to resistance training.⁶

A retrospective study showed that women aged 20 to 49 years who consumed more milk during childhood had higher bone mineral content than those whose intake of milk intake during childhood was low.⁷

Overall, controlled trials of calcium or dairy intake have reported positive short-term effects on bone measures during growth, particularly when habitual calcium intake is low. Several follow-up investigations indicate that after intervention is discontinued, effects of dairy food

or calcium intake on bone mineral density gains are maintained from 1 to 7.5 years (depending on the study); in other studies no sustained effect has been observed. Factors such as the timing of puberty, source of calcium (food or supplement) and habitual calcium intake may influence lasting calcium supplementation response.

Milk and other calcium-dense dairy foods are identified as the preferred dietary source of calcium. Foods such as green leafy vegetables, beans and calcium-fortified foods are other sources of calcium, although the bioavailability of calcium in some of these foods is low. Calcium supplements are another source; however, they do not have the benefit of the other nutrients associated with dairy products.

Because it is unknown whether a short-term increase in calcium results in a long-term benefit on bone health, it is important to establish dietary practices that promote adequate calcium intake in childhood and maintain those practices throughout life.

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All American Dairy Products, Inc.

All American Dairy Products, Inc. offers export customers targeted blended dairy ingredients designed to fit individual food category and application needs. AADP also specializes in producing private-label nutraceutical products.

The Malvern, Pennsylvania-based company has provided dairy ingredients and nutraceutical products to the U.S. markets since 2002. AADP widened its reach to include export markets and is currently exporting to China. AADP's international team has more than 50 years of combined experience in the dairy products industry.

AADP offers dairy ingredient formulations that can adapt to the specific application needs of the bakery, confectionery, beverage, meat, spice and dairy food industries. AADP also offers high-protein functional/nutritional ingredients such as casein, caseinate and milk protein concentrate derived directly from fresh clean-tasting fluid milk; and whey protein concentrate and isolate.

AADP recently introduced its *Dairy Nature* line of certified organic skim milk powder and whole milk powder. The organic milk is sourced from grass-fed herds in Pennsylvania.

"Consumers worldwide are becoming more knowledgeable about nutrition and increasingly concerned about their health and fitness. Both professional athletes and ordinary consumers want convenient, effective, great-tasting foods targeted to meet particular fitness needs," says Paul Knox, AADP's vice president.

AADP also specializes in developing high-quality, U.S.-made nutraceutical products for distribution in foreign markets, including protein and other nutritional powders, drink mixes and fitness beverages.

"Competition is just not the athlete's concern anymore – it is now extreme among the nutrition industry itself," says Christophe Le Lan, AADP's CEO. "We

aim to offer top-quality natural ingredients in an increasingly global environment."

AADP customers can utilize the company's in-depth private label product development expertise to create their own brand of health supplements and other nutraceutical products.

AADP provides customers with inventory reduction programs, monitored logistics and protective procedures for product delivery. Products are extensively tested by a USDA-accredited laboratory prior to shipping. In addition, delivery logistics are designed to fit customer production timetables and warehousing capacities.

Product Roster

Dairy Solids

Specialized dairy blends for **bakery** (croissants, cake mixes, cookie dough); **deli** (sausages, coatings, sauces); and **dairy** (ice cream, cheese sauces, yogurts).

Nutraceutical

Complete design of a product line (protein, flavor profile and packaging).

Dairy Proteins

Whey Protein Concentrate 80%: sweet whey processed in an ultrafiltration system.

Whey Protein Isolate 93%: sweet whey processed in a microfiltration system.

Milk Protein Concentrate 85%: fresh skim milk processed in an ultrafiltration system.

Rennet Casein: Spray dried from enzyme coagulated fresh skim milk. (90 mesh)

Caseinates: Spray dried from fresh casein curds, includes calcium; sodium; potassium; magnesium caseinates.

Milk Powders:

Low-heat nonfat dry milk: U.S. Grade A and Extra Grade.

High-heat nonfat dry milk: U.S. Grade A and Extra Grade.

Sweet cream buttermilk powder: manufactured from buttermilk produced during the churning of sweet cream into butter.



Whole milk powder: contains 26% and 28.5% milkfat.

Whey Powders

Dry whey: whole sweet whey powder.

Demineralized whey: sweet dairy whey with 25% of minerals removed via electro dialysis.

Delactosed whey: sweet whey with lactose removed by crystallization.

Whey protein concentrate 34%: sweet whey processed in an ultrafiltration system.

Lactose: spray dried milk sugar (60 to 300 mesh size)

Dairy Powders

Cheese powders: whole natural 100% cheese powders (cheddar, feta).

Yogurt powders: naturally fermented spray dried yogurt powder.

Sour cream powders: Spray dried cultured cream.

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The Artisan Cheese Exchange

The Artisan Cheese Exchange is an export management and trading company making U.S. artisan, organic and other specialty cheeses more accessible to overseas buyers.

The company serves as a bridge between cheese makers in the U.S. and customers across the globe, providing supply chain services, and sales and marketing strategies to ensure international consumers the freshest, most consistent American artisan cheeses available.

“Cheese makers throughout the U.S. have demonstrated a renewed passion for their craft in recent years, winning awards for their top quality specialty cheeses,” said Christopher Gentine, owner/president of The Artisan Cheese Exchange. “At the same time, cheese has become a favorite on menus in Asia, South America and other locations worldwide. We believe it’s time for these “American Originals” and their cheese makers to be recognized in the thriving international marketplace.” The Artisan Cheese Exchange has established relationships with the U.S.’s most respected artisan and specialty cheese makers to bring their award winning cheeses to the global marketplace. Some of the companies that they represent include: Carr Valley, Cypress Grove, Marin French, Organic Valley, Rogue Creamery, Roth Kase, and Vella Cheese, just to name a few. The Artisan Cheese Exchange is based in Sheboygan, Wisconsin and has consolidation partners whose facilities are strategically placed throughout the United States to help meet the specific logistic requirements of their customers.

Christopher Gentine and his wife Julie have completed several trade missions to introduce U.S. specialty cheeses to the global marketplace. They are currently

exporting over 60 of their artisan and specialty cheeses to customers in international markets including Taiwan, Korea and Japan. The limited availability, perishability and special handling requirements for specialty cheese mean export programs are specifically designed to meet the needs of each individual customer.

Gentine is a third generation member of a U.S. cheese industry dynasty. His first job was scraping and cleaning cheese at his grandfather’s Wisconsin cheese company, Sargento Foods, and he continued to work at Sargento throughout his teen and college years. He then joined his father’s private label cheese packaging and distribution company, Masters Gallery Foods. At Masters Gallery Foods Gentine worked his way through the organization’s training program, holding positions in sales, procurement, operations and logistics before leaving the company as president in the spring of 2006. In September 2006, he founded The Artisan Cheese Exchange with his wife, Julie, who offers a degree in advertising and journalism as well as a solid retail industry background from some of the U.S.’s top specialty retailers.

“A big part of our family’s success in the cheese industry has been building long-term relationships with cheese makers and customers,” Gentine said. “That, along with years of industry knowledge combined with a love for the romance and flavor of fine cheese, has served us well. I know that my father and grandfather would be proud to see us continue on with the family tradition,” he said.

“Our vision,” explained Gentine, “is to export the passion, artistry and wholesomeness of specialty cheeses worldwide.”



American Artisan and Farmstead Cheeses
Exporting the Passion Worldwide

Product Offerings

- American artisan, organic, and farmstead cheeses
- American specialty cheeses
- Blue
- Brie/camembert
- Cheddar
- Colby
- Cream cheese
- Feta
- Gouda/edam
- Monterey Jack
- Mozzarella
- Munster/brick
- Parmesan
- Provolone
- Ricotta
- Swiss
- Hispanic style cheeses
- Italian style cheese

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