



AMERICAN
Dairy Products
INSTITUTE™

Nonfat Dry Milk (NDM)

Product Definition

Nonfat Dry Milk (NDM) is obtained by the removal of water from pasteurized skim milk. Nonfat Dry Milk contains not more than 1.50% fat and not more than 5.0% total moisture.

Nonfat Dry Milk complies with all provisions of the U.S. Federal Food, Drug, and Cosmetic Act.

Composition

PARAMETER	UNITS OF MEASURE	EXTRA GRADE		STANDARD GRADE	
		SPRAY DRIED LIMITS	ATMOSPHERIC ROLLER DRIED LIMITS	SPRAY DRIED LIMITS	ATMOSPHERIC ROLLER DRIED LIMITS
FAT	%	1.25 maximum		1.50 maximum	
TOTAL MOISTURE	%	4.0 maximum		5.0 maximum	

Other Characteristics

PHYSICO-CHEMICAL PROPERTIES					
PARAMETER	UNITS OF MEASURE	EXTRA GRADE		STANDARD GRADE	
		SPRAY DRIED LIMITS	ATMOSPHERIC ROLLER DRIED LIMITS	SPRAY DRIED LIMITS	ATMOSPHERIC ROLLER DRIED LIMITS
SCORCHED PARTICLES	mg/25g	15.0 maximum	22.5 maximum	22.5 maximum	32.5 maximum
TITRATABLE ACIDITY	%	0.15 maximum		0.17 maximum	
SOLUBILITY INDEX	%	1.2 maximum ¹	15.0 maximum	2.0 maximum ¹	15.0 maximum
APPEARANCE	visual	entirely free from lumps that do not break up under slight pressure		free from lumps that do not break up under slight pressure	
FLAVOR	sensory	sweet and desirable flavor; may possess chalky, cooked, feed and flat flavors to a slight degree	same as for spray dried product; a slight scorched flavor is also permitted	fairly desirable flavor; may possess bitter, oxidized, stale, storage, utensil, and scorched flavors to a slight degree; and chalky, cooked, feed and flat flavors to a definite degree	same as for spray dried product; a definite scorched flavor is also permitted

¹ Except for product designated as "high heat" which shall have a limit of 2.0 maximum for Extra Grade and 2.5 maximum for Standard Grade.

Product Labeling

Recommended identifications:

Nonfat Dry Milk (where the heat treatment classification should be included)

Protein Quality

Protein Digestibility Corrected Amino Acid Score (PDCAAS).....**1.00**

Digestible Indispensable Amino Acid Score (DIAAS).....**1.44**

Permissible Additives

Nonfat Dry Milk may not contain, or be derived from:

- Dry buttermilk;
- Dry whey;
- Products other than skim milk.

Added preservatives, neutralizing agents, and other chemicals are not permitted in Nonfat Dry Milk.

Functionality and Applications



HIGH PERFORMANCE:

Hydration Rate
Heat Stability



MEDIUM PERFORMANCE:

Water Binding
Emulsification
Browning

Nutrition Facts	
servings per container	
Serving size	(100g)
Amount per serving	
Calories	360
% Daily Value*	
Total Fat 1g	1%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 20mg	7%
Sodium 540mg	23%
Total Carbohydrate 52g	19%
Dietary Fiber 0g	0%
Total Sugars 52g	
Includes 0g Added Sugars	0%
Protein 36g	
Vitamin D 0mcg	0%
Calcium 1257mg	100%
Iron 0mg	0%
Potassium 1794mg	40%

*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.

Nonfat Dry Milk is typically used for fluid milk fortification, frozen desserts, cheese, yogurt, dairy beverages, bakery products, custards, gravies, sauces, frozen foods, packaged dry mixes, processed meats, soups, infant formulas, snack foods, cosmetics, and others.

The heat treatment classification of Nonfat Dry Milk has bearing on its appropriate end-use applications.

Nonfat Dry Milk and Skim Milk Powder are analogous ingredients, with the former representing the U.S. definition and the latter representing the international (Codex Alimentarius) definition, respectively. Note that the U.S. definition permits the fortification of Nonfat Dry Milk with either vitamin A and/or vitamin D, but does not allow for raising or lowering the protein content (“standardization”) by adding specific permissible additives as is permitted for Skim Milk Powder.

Product Examples

(launched in the last year) *Credit: Innova Market Insights*



Smearcase Froco Ice Cream: Nonfat dry milk is used most widely in dairy applications like this ice cream product made with cottage cheese. Nonfat dry milk contributes milk solids not fat (MSNF) important for many dairy applications.



Glutino Gluten Free Pretzel Twists: The white confectionary coating on these pretzels gets its characteristic white color and milky flavor from nonfat dry milk. Milk powders provide a premium quality to confectionary coatings.



Freshana Hollandaise Sauce Mix: Sauce mixes are an ideal application for nonfat dry milk to provide the dairy base for this hollandaise sauce. It provides convenience and ease of preparation when only water needs to be added instead of fresh milk.



Trader Joe's Gluten Free Pizza Dough: Baked products like pizza dough benefit from the functionality of nonfat dry milk. It provides surface browning, crumb softening, and enhances the flavor of baked products.

Ingredient Labeling Note:

Nonfat Dry Milk may comply with all aspects of the definition for Skim Milk Powder, but Skim Milk Powder (which is permitted to be standardized) does not comply with Nonfat Dry Milk requirements by definition. This “one-way” equivalence has implications for product formulation and labeled ingredient declarations.