

FLOUR 101



What is protein?

Protein is the most common measure of the gluten content of various wheat types and the resulting flour, and is the most accepted standard for flour prices and grades.

What is gluten?

Gluten is functionally important in baked goods because it forms an elastic web when mixed with water that traps gasses produced during the leavening process, allowing bread to “rise.”

Some products, such as cakes and pastries, call for less gluten, while others, such as crusty breads and bagels, require more gluten.



Wheat is a non-GMO grain. El trigo es un grano non-GMO.

FLOUR DEFINITIONS

Moisture: The amount of water present in the flour after milling, typically 14%.

Ash: The mineral content left after “burning” the flour sample. The highest concentration of ash is in the bran. Ash is used as a general indicator of bran content.

Patent: A term used to describe lower-ash flour.

Absorption: The amount of water that will be taken up by flour to produce the desired dough consistency and performance.

WHEAT TYPES

Soft Red Winter: Grown in the eastern United States. Low in protein. Used for flatbread, cakes, pastries and crackers.

Hard Red Winter: Grown in the central United States. High in protein, strong in gluten. Used for yeast breads and hard rolls.

Hard Red Spring: Grown in the north central United States. Highest in protein. Used in yeast breads, hard rolls and noodles.

Durum: Grown in North Dakota and Montana. Used for production of macaroni and spaghetti.

Hard White: Grown primarily in Colorado and California. Used in yeast bread, hard rolls and noodles.

Soft White: Grown in the Northwest. Low in protein. Used for flatbreads, cakes, pastries, crackers and noodles.

FLOUR GRADES

Cake & Pastry: Common applications include cakes, pastries, pie crusts and crackers.

Protein: 6.25% - 9.25%
Ash: 0.36%
Moisture: 14% maximum

All-Purpose H&R: Applications include cookies, gravies, breadings, muffins, biscuits, pancakes and brownies.

Protein: 9.0% - 13.0%
Ash: 0.52% - 0.56%
Moisture: 14% maximum

Bread/Tortilla: Common applications include pan breads, sweet doughs, yeast-raised donuts, soft rolls, Danish pastries, croissants, tortas and tortillas.

Protein: 10.7% - 12.5%
Ash: 0.50% - 0.54%
Moisture: 14% maximum

Pizza/Hearth-Style Bread: Common applications include thick-crust pizzas, kaiser rolls, hearth breads, and specialty and variety breads.

Protein: 12.2% - 13.3%
Ash: 0.52% - 0.56%
Moisture: 14% maximum

High Gluten: Applications include bagels, thin-crust pizzas, kaiser rolls and hearth breads.

Protein: 13.2% - 14.3%
Ash: 0.52% - 0.56%
Moisture: 14% maximum

FLOUR TREATMENTS

Bleach: Benzoyl peroxide is added to remove the natural creamy yellow color of flour, producing a whiter flour. It has no effect on the baking performance of the flour.

Enrichment: Nutrients (B vitamins, iron, folic acid) are added to refined flour. It has no effect on the baking performance of the flour.

Potassium Bromate/Ascorbic Acid: Maturing agents improve flour’s bread-making performance. They strengthen the dough-forming properties, improve dough-gas retention and increase dough volume.

Malted Barley/Fungal Alpha Amylase: Provide enzymes to supplement the naturally occurring wheat enzymes. They convert starch into fermentable sugars. Yeast converts the sugars into carbon dioxide and alcohol during the fermentation process.

Chlorination: Chlorine gas is added to improve flour color and cake baking quality. In high-ratio cake flour, adding chlorine results in improved volume and a finer crumb texture. It also results in a reduction of flour pH to 4.4 - 4.8. Chlorine can also be added in lesser amounts to cookie flour in order to control cookie spread.

TREATMENTS

AA	Untreated	FA	Wheat flour enriched (wheat flour, niacin, ferrous sulfate, thiamine mononitrate, riboflavin, folic acid)
AB	Wheat flour, malted barley flour	FD	Wheat flour enriched (wheat flour, niacin, ferrous sulfate, thiamine mononitrate, riboflavin, folic acid), malted barley
AL	Bleached wheat flour	FF	Semolina (wheat), niacin, ferrous sulfate, thiamine mononitrate, riboflavin, folic acid
AP	Wheat flour, malted barley flour, potassium bromate	RA	Wheat flour enriched (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid)
AR	Bleached wheat flour, potassium bromate	RC	Bleached wheat flour enriched (bleached wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid)
AY	Bleached wheat flour, malted barley flour	RG	Wheat flour enriched (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), malted barley flour
AZ	Bleached wheat flour, malted barley flour, potassium bromate	RH	Wheat flour enriched (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), malted barley flour, ascorbic acid as a dough conditioner
EA	Wheat flour enriched (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), enzyme	RI	Bleached wheat flour enriched (bleached wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), malted barley flour
EC	Bleached wheat flour enriched (bleached wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), enzyme	RJ	Bleached wheat flour enriched (bleached wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), malted barley flour, ascorbic acid added as a dough conditioner
EF	Bleached wheat flour enriched (bleached wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), potassium bromate, enzyme	RK	Bleached wheat flour enriched (bleached wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), malted barley flour, potassium bromate
EI	Wheat flour enriched (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), enzyme	RN	Wheat flour enriched (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), malted barley flour, potassium bromate
EK	Wheat flour enriched (wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), enzyme, potassium bromate	RS	Bleached wheat flour enriched (bleached wheat flour, niacin, reduced iron, thiamine mononitrate, riboflavin, folic acid), enzyme
EQ	Wheat flour enriched (wheat flour, niacin, ferrous sulfate, thiamine mononitrate, riboflavin, folic acid), malted barley		

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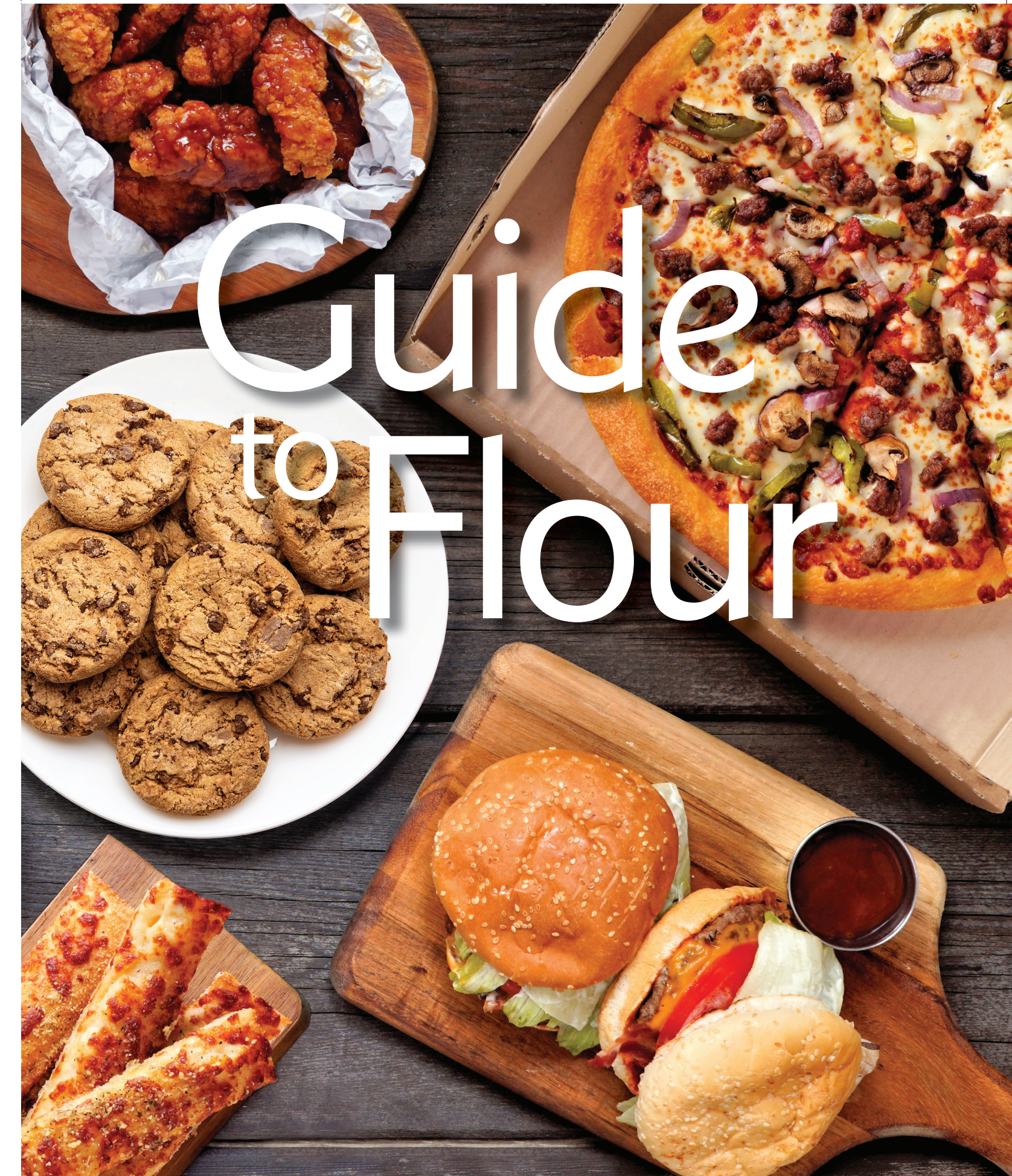


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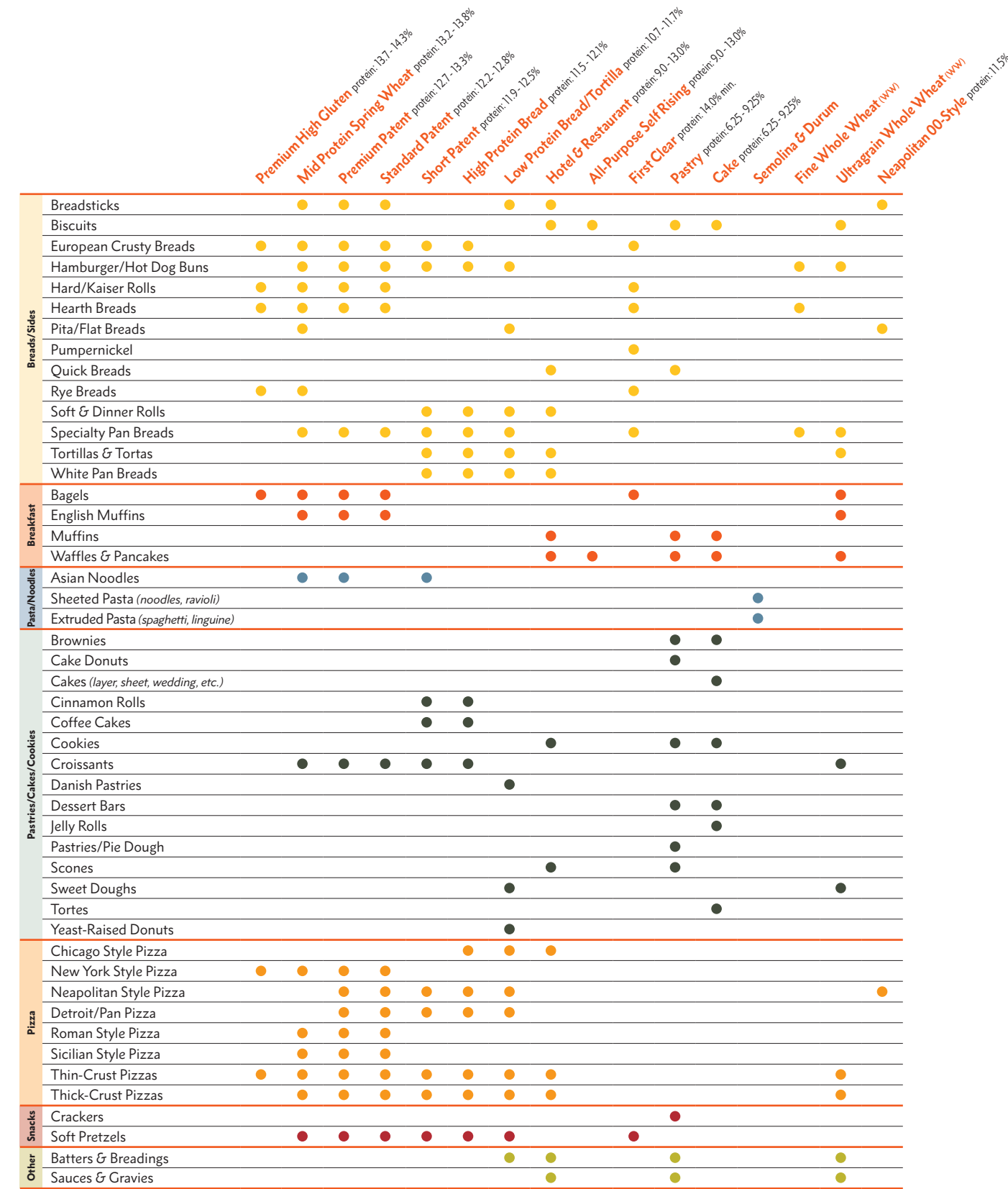
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APPLICATIONS



Specialty Flours and Innovative Whole Grains

In addition to premium multi-use flours, we have a complete suite of specialty ingredients, including organic flours, whole grains, Ultragrain® whole wheat flour, Sustagrain® high-fiber barley, Ardent Mills Ancient & Heirloom Grains®, gluten-free flours and grains, SafeGuard® flour for RTE applications, rye, and custom grain blends and mixes.

BRANDS BY CATEGORY

Use this chart to determine which Ardent Mills flours best fit your needs.*

	Ardent Mills Brands	OTHER MANUFACTURERS' BRANDS					
		ADM	Grain Craft	Bay State	General Mills	North Dakota Milling	Miller Milling (MMC)
Premium High Gluten Protein: 13.7 - 14.3%	Hummer®, Kyrrol®, Full Power®, Canadia®	Gigantic®, Regal®, Cavalier®, Hi-Rise™	Montana Hi Gluten	Bouncer®, Golden Tiger®, Tigre De Oro®, Heritage® High Gluten Artisan	All Trumps™, King Kaiser™, Balancer™, Potentate™	Dakota State, Dakota Chief, Dakota Queen, Big 15, Empire Builder	Premium High Gluten
Mid Protein Spring Wheat Protein: 13.2 - 13.8%	Producer®, Urban's Special®	Dominator®	Collins Best®	Perfect Diamond®	Remarkable™, Supreme™, Evenloaf™	Dakota Champion, Dakota Brave	Hearty Gluten
Premium Patent Protein: 12.7 - 13.3%	Magnifico Special®, Spring Hearth®, Sunny Texas®, Spring King®	Commander®	Power®, Power Special®	Golden Lion®, Aristocrat®, Four Star®	Pillsbury Best™, Hi-Power	Dakota Diamond, Millers Choice	Premium Bay Area Patent, Premium Patent (Big Tex)
Standard Patent Protein: 12.2 - 12.8%	King Midas Special®, Qualitate®, Seal of Minnesota™, Sun Spring®, Simply Milled® Organic Premium Bakers Flour	Spring Up®, Majestic®	Titan	Winona® Patent	Washburn's Gold Medal™, Full Strength™, Superlative™, Rex Royal, XXXX Patent™		Texas Patent Flour
Short Patent Protein: 11.9 - 12.5%	Occident®, Sapphire		Morbread®, Mondako®, Mondako® Special, Special Pizza Blend	Wingold® Special, European Artisan	All Aces™, Sureloaf™, Harvest King™, Big Loaf™, Protector™	Dakota Maid, Bakers Pride, Dakota Pride	
High Protein Bread Protein: 11.5 - 12.1%	Minnesota Girl®, Denrado®		Bench Boss, Ace Hi® Bakers, Montana Spring Patent	Big Yield®			Bakers (Mello Judith®)
Low Protein Bread/Tortilla Protein: 10.7 - 11.7%	Buccaneer®, Drinkwater®, Cuatro Cosechas® Tortilla, Simply Milled® Organic Bread Flour	Top King®, Golden Hawk®, Polar Bear®	Ace Hi® Superior Tortilla, Grain Craft Tortilla, Kansas Sun, Premier Bread, Blue Ribbon	Basco®	G.M. 44™, Imperial Bakers™, King Wheat®, Sperry Blossoms™, Gold Medal® Tortilla		Tortilla (Grand Joaquin®), Tortilla (La Unica®), Bakers Flour
Hotel & Restaurant Protein: 9.0 - 13.0%	Ardent Mills H&R, Ardent Mills H&R Soft, Simply Milled® Organic All Purpose	ADM H&R	H&R All Purpose, Bake-Rite H&R, Institutional All Purpose	Wingold® H&R	Gold Medal® H&R, Pillsbury® H&R, Golden Gate®, Gold Medal® Medallion, Pollyanna™		H&R All Purpose
All-Purpose Self Rising Protein: 9.0 - 13.0%	Ardent Mills H&R Self Rising			BakingEssentials®	Gold Medal® Self-Rising		
First Clear Protein: 14.0% min.	Powerful®	Atlas®		Boxer®		Dakota Warrior	
Pastry Protein: 6.25 - 9.25%	White Spray®, Simply Milled® Organic Pastry Flour	Swan Pastry®, ADM Cake & Pastry	Mayfair® Pastry, Ace Hi® Cake & Pastry, White Spear® Pastry, Grain Craft Pastry, Blue Ribbon Pastry	Wingold® Pastry	Cameo®, Golden Shield™, Helmet™, Sureflake®		Pastry
Cake Protein: 6.25 - 9.25%	American Beauty®, Pikes Peak®, Kings Peak®, Cuatro Cosechas® Cake	Tea Table Cake®, ADM Cake	Mayfair® Cake, Spun White™ Cake, Queen® Cake, Ace Hi® Cake & Pastry	Wingold® Cake	Sperry® Cake & Pastry, Purasnow™		
Semolina & Durum	King Midas® #1 Semolina, King Midas® Extra Fancy Durum	Semolina, Durum Extra Fancy	#1 Semolina, Durum	Wingold® Semolina, Wingold® EFDP	Gold Medal® Semolina No.1, Sperry™ Extra Fine Durum Patent	Durakota #1 Semolina, Excello Fancy Durum Flour	Durum Semolina, Durum Extra Fancy Patent, Durum Patent
Fine Whole Wheat (ww)	Stone Ground Fine WW, Simply Milled® Organic Whole Wheat	ADM Stone Ground WW	Hi Pro Whole Wheat	Wingold® Fine	Gold Medal™ Stone Ground WW, Wheat-a-Laxa™	Dakota WW	Stone Ground WW, White Whole Wheat
Ultragrain White Whole Wheat (ww)	Ultragrain® Hard, Ultragrain® Soft, Ultragrain® T2 Blend	Kansas Diamond®	White Whole Wheat	GrainEssentials® Extra Fine Hard, GrainEssentials® Extra Fine Soft			
Neapolitan 00-Style Protein: 11.5%	Primo Mulino®		Blendako, Neapolitan Pizzeria, Upright	Contadino	Di Prim'Ordine Farina, Gold Medal™ Neapolitan		

*Brand names listed in this table under the Ardent Mills column are owned or licensed by Ardent Mills; the remaining names in this table are not owned or licensed by Ardent Mills and are trademarks of their respective owners. Flour category information for other manufacturer brands are best estimates based upon publicly available information.

