Guide to

Flours

Take a quick trip down the baking aisle of your local grocery store, and you'll quickly discover that there is much more to flour than just white and wheat. But don't panic! This brochure is designed to give a clearer understanding of some of the key differences in the many types of flour, and what the best applications are for each type.

Dutch Valley Food Distributors Inc.

www.dutchvalleyfoods.com

5000FD/122013

Guide to Flours:

Wheat is a Many-Splendored Thing

There are about 30 species of wheat worldwide, from which are derived more than 30,000 varieties. The USDA divides wheat into eight classes, some of which are divided into subclasses.

Naturally, with so many species of wheat, there are many types of flours available in today's marketplace. This is great in terms of variety, but can create a bit of confusion as to which flour to use in which recipe. Considerations such as protein quantity and quality, and ash ratings further complicate making selections.

For the purpose of helping you find the best general choices for your baking needs, we have classified our flours into five categories: High Gluten, Medium Gluten, Low Gluten, Gluten Free, and Specialty. We have also included some information on additives and other information that might weigh into your decision making process. This simplistic approach is meant to offer a direction from which to start exploring baking possibilities.

Guide to Flours:

Frequently Asked Questions

What is the difference between bleached or unbleached?

As unbleached flour ages, a natural oxidizing process occurs that whitens and matures the flour. However this natural "bleaching" process is time consuming and yields results that can be inconsistent. Flour producers discovered that using a chemical treatment on the flour could speed the process and produce a much more consistent product. While often thought to be interchangeable in most recipes, bleached flours generally produce a lighter product and are preferred for making delicate pastries. Unbleached flours are often preferred in yeast breads and sturdier baked goods. Though nutritionally, bleached and unbleached flours are practically the same, chemically bleached flour is not considered natural. Bleaching does cause a slight decrease of vitamin E, but since the amount of vitamin E in flour is fairly small, the decrease is most often considered insignificant.

What does it mean if something is bromated?

Bromated flour has been enriched by the addition of potassium bromate, which helps the flour to form dough that is stronger and more elastic. It has also been found to shorten the mixing time needed to create the correct consistency of the dough. Flour that is bromated is no longer defined as natural.

What are sprouted grains?

When a grain begins to sprout, it is actually beginning to transform into a plant. Sprouted flour is flour made from dried, sprouted grain. The human body perceives sprouted grains and products made with them as plant material (vegetables) which are the most easily digested foods we eat.

(For more information go to www.essentialeating.com)

What is stone-ground flour?

Stone-ground flour is made by using two large milling stones to slowly crush and grind kernels of grain without creating heat, which can destroy many of the nutrients in the grain. Much of the flavor of the grain is also retained, resulting in a sweeter, nuttier flavor.

Guide to Flours:

Definition of Terms Used in the Guide

The information listed below is a starting point for gathering information that will help educate you on some of the terms you will encounter on your path to finding the right flour for your baking needs. If you desire more detailed information, the Internet has many options for more in-depth research. Many flour manufacturers have resources available on their web pages, too.

Certified Organic

Organic is a labeling term that indicates that the food or other agricultural product has been produced through approved methods. These methods integrate cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity. Synthetic fertilizers, sewage sludge, irradiation, and genetic engineering may not be used.

In order to sell, label or represent their products as organic, operations must follow all of the specifications set out by the USDA organic regulations. If a product label has the USDA organic seal, the product is certified organic and has 95 percent or more organic content.

(Info via U. S. Department of Agriculture)

GMO's

The term GMO stands for "genetically modified organism" which is a way to communicate that a particular food ingredient has been scientifically manipulated to achieve characteristics that it normally would not have in nature, such as increased insect resistance or inclusion of additional nutrients. Many species of plants have been modified in this way including alfalfa, corn, flax, rice, sugar beets, canola, cotton, papaya, soy, zucchini, yellow summer squash and wheat, in addition to some species of some ornamental flowers and trees.

(Info via U. S. Department of Agriculture and www.nongmoproject.org)

Malt Added

Malted Barley is barley that has been steeped, germinated, and kilned. Malting converts insoluble starch to soluble starch, generates nutrients for yeast development, and reduces complex proteins. Malted barley flour, sometimes referred to simply as "malt," is mixed into flours to add moistness and sweet flavor, aid the appearance of yeast breads, and extend shelf life of baked products.

(Info via U. S. Department of Agriculture)

Self-Rising

Self-rising flour is most commonly used for baking cakes and biscuits. This flour is a combination of all purpose flour with added salt and leavening (baking powder). All the other flours listed as "self-rising" have potassium bromate in them as a "flour improver" to aid in the rising process.

(See the following for more info on bromate: http://www.kingarthurflour.com/professional/bromate.html)

Enriched

If a flour is indicated as enriched, it has been supplemented with iron and four B vitamins (thiamin, niacin, riboflavin and folic acid), in equal amounts to what has been removed with the bran and germ, plus supplemented with calcium. The process does not change the taste, color, texture, baking quality or caloric value of the flour.

Guide to Flours:
Protein and Gluten: Why they Matter

Gluten is actually a combination of two proteins commonly found in grains. When water is added to flours containing these two proteins, it allows them to combine into gluten, a tough and rubbery substance that has elastic properties as well as the strength to retain gases. These properties allow baked goods to stretch and rise, giving us fluffy loaves of bread and chewy bagels.

Protein amounts in wheat vary greatly by wheat class, specific individual variety and can also be affected by weather changes and soil fertility. A very general rule of thumb is the higher the amount of protein in the wheat, the more gluten will be present and the more elasticity and strength will be present in the dough.

Currently there is no specific industry standard as to what percentages of protein determine whether a particular flour has a high, low or medium gluten content, so we have incorporated manufacturers' suggestions for best applications for their products. High gluten and low gluten flours are best suited for particular types of goods, while medium gluten flours are what are commonly considered acceptable for a wider variety of uses.

Given that there is always some variance of protein levels in grain based on seasonal conditions and other variables, for the charts in this brochure we have used the average percentages usually found in each variety of flour listed.

Guide to Flours:
Low Gluten Flours

While the lower range of the medium gluten flours can be used to make cakes and pastries, the low gluten flours really do more justice to the tender crumb that is desirable in many kitchens and bakeries. Ballpark range for this category is 6-9%, with true cake flours at the bottom end of the range. Common use of low gluten flours would be for cakes, pastries, muffins, scones, cream puffs, éclairs, cake doughnuts, and non-spread cookies.

Flour Description	Protein % (Gluten)	Certified Organic	Non-GMO	Malt Added	Self-Rise	Enriched
General Mills						
Pure-as-Snow (bleached)	8.20%		yes			yes
ConAgra						
White Spray Pastry Flour	8.50%		yes			yes
American Beauty Cake Flour (Hi-Rise) (bleached)	7.80%		yes			yes
Snavely's						
Pie & Pastry-Enriched	8.50%		yes			yes
Pie & Pastry	8.50%		yes			

Guide to Flours:
A Note on Taste

It would be easy to say that low gluten flour is best for biscuits or high gluten flour is best for bagels, but one must take into consideration that regional preferences play a huge role in determining what makes a product "just right."

For example, biscuits in the southern region of the United States are often more crumbly in texture as opposed to the flakier, more chewy biscuits preferred elsewhere. Traditional New York bagels are certainly more chewy and dense than the bread-like bagels found in central Pennsylvania.

If you try flour that doesn't quite give you the results you are looking for, try switching to either higher or lower gluten flour and see how that affects your recipes.

Guide to Flours:
Medium Gluten Flours

This category is definitely the widest ranging in terms of usage and end-product characteristics. Protein percentages again have no definitive range, but are somewhere between 10-12% or 10-13%. It contains flours called "all-purpose" that will likely work in any home-kitchen recipe, but might not really be the best choice for some applications. Consider this group of flours for breads, quick breads, breading, cookies, cakes, biscuits, muffins, pie dough and doughnuts. Choose flours from the highest end of the range for fluffy, airy breads and chewier cookies, or from the lower end for cakes and pastries.

Flour Description	Protein % (Gluten)	Certified Organic	Non-GMO	Malt Added	Self-Rise	Enriched
General Mills						
Full-strength (unbleached)	12.60%		yes	yes		yes
Full-strength	12.60%		yes	yes		yes
All Purpose (bleached)	10.60%		yes	yes		yes
King Arthur						
Special Flour	12.70%		yes	yes		yes
Sir Galahad Artisan (unbleached)	12%		yes	yes		yes
Select Artisan Organic	11.30%	yes	yes			
ConAgra						
Occident Flour (unbleached)	12.20%		yes	yes		yes
Occident (bleached)	12.20%		yes	yes		yes
All-Purpose (H&R) (bleached)	10.5%*		yes	yes		yes
King Midas (bleached)	12.60%		yes	yes		yes
Seal of Minnesota (unbleached)	12.60%		yes	yes		yes
Seal of Minnesota	12.60%		yes	yes		yes

Guide to Flours:
High Gluten Flours

Available information puts the range of protein in high gluten flours between 13-14% or 12-14% and higher depending on the source. What we do know generally is that the higher the gluten in the flour, the more stretchy and sticky the dough will be – think chewy bread loaves with well-developed crusts. Consider using these flours for bagels, pizza crust, bread, hearth bread, Kaiser rolls and other similar recipes. If you want a really chewy bagel, go toward the higher end of the range. For a fluffy loaf of bread maybe mid to lower end of the range is right for you.

Flour Description	Protein % (Gluten)	Certified Organic	Non-GMO	Malt Added	Self-Rise	Enriched
General Mills						
All-Trumps (bleached)	14.20%		yes	yes		yes
King Arthur						
Sir Lancelot Hi-Gluten	14.00%		yes	yes		yes
ConAgra						
Kyrol (bleached)	14%		yes	yes		yes
Enriched Producers	13.40%		yes	yes		yes
Bob's Red Mill						
Unbleached White Flour Organic	11%	yes	yes			
Wheat Montana						
Organic Prairie Gold Flour	13%	yes	yes			
Prairie Gold 86 Flour	15.50%		yes			
Natural White Premium Flour	13.40%		yes	yes		yes
Bronze Chief Flour	15.50%		yes			
Prairie Gold Premium Flour	16%		yes			
Bronze Chief Premium Flour	16%		yes			

Guide to Flours:
Gluten Free Flours

Gluten sensitivities have become a commonly accepted consideration in modern dietary practices. There has been an increasing demand for baked goods that satisfy the palate and address the health concerns of those following a gluten free diet. In order to replicate the soft rolls, sweet baked desserts and pizza crusts we love in a gluten free version, additives like guar gum and xanthan gum are combined with the gluten free flours to give dough and batters the strength and elasticity of their conventional counterparts. As research continues and new combinations of ingredients are used, gluten free offerings continue to gain popularity and often contain additional health benefits.

Flour Description	Protein % (Gluten)	Certified Organic	Non-GMO	Malt Added	Self-Rise	Enriched
Bob's Red Mill						
G/F All Purpose Baking Flour	10%					
G/F Millet Flour	10%		yes			
G/F Potato Flour	8%		yes			
G/F Brown Rice Flour	7%					
G/F White Rice Flour	5%					
G/F Sorghum Flour	11%		yes			
G/F Organic Coconut Flour	14%		yes			
G/F Garbanzo Bean Flour	13%		yes			
G/F Corn Starch	0%					
G/F Potato Starch	0%		yes			
G/F Tapioca Flour/Starch	0%		yes			
G/F Organic Quinoa Flour	14%	yes	yes			
G/F Amaranth Flour	13%		yes			
G/F All Purpose Flour	10%					
G/F Garbanzo Bean Flour	13%		yes			
G/F Organic Quinoa Flour	14%	yes	yes			
G/F Almond Meal/Flour	21%		yes			
G/F Coconut Flour	14%		yes			
G/F White Sorghum Flour	11%		yes			
G/F Potato Starch	0%		yes			
G/F Potato Flour	8%		yes			
G/F Tapioca Flour	0%		yes			
G/F Brown Rice Flour	7%					
G/F Sweet White Rice Flour	5%					
G/F Millet Flour	10%		yes			
G/F Teff Grain	11%		yes			
G/F Teff Flour	11%		yes			

Guide to Flours:

Specialty Flours

Specialty flours can be used when a specific flavor profile is desired or when certain health benefits are desired. Whole wheat flours, for example, are highly recommended over white flours and other flours that use only part of the grain. Whole wheat was created as a whole food. It has a wonderful balance of fiber, protein, vitamins & minerals before it is processed. Modern milling practices for white flour remove the bran and the germ, which contains most of vitamins, minerals and fiber. Then they add "synthetic enrichments", "bleaching" and "bromation," producing a flour that is far from natural.

There are also many non-wheat flours available in the marketplace. The unique composition of nutrients in these flours makes them appealing to the health-conscious baker. Please see our Alternatives to Wheat section for more details on some of the non-wheat flours available in the marketplace. Durum wheat and its derivative semolina, listed in our specialty section, contain a high amount of protein that creates very strong gluten and are used in making pasta and some breads.

Flour Description	Protein % (Gluten)	Certified Organic	Non-GMO	Malt Added	Self-Rise	Enriched
General Mills						
Whole Wheat-Stone Ground	13.80%		yes			
Self-Rising Flour (bleached)	10%		yes	yes	yes	yes
King Arthur						
Organic Whole Wheat	14.20%	yes	yes			
ConAgra						
Whole Wheat M. Stone Ground	14%		yes			
Whole Wheat Fine Stone Ground	14%		yes			
Ultragrain White Whole Wheat	13%		yes			
Semolina	11.50%		yes			yes
King Midas Durum Flour	11.50%		yes			yes
White Rye	9%*		yes			
Pumpernickel (Medium Rye)	9%*		yes			
Snavely's						
Whole Wheat-Fine	14%		yes			
Whole Wheat-Medium	14%		yes			
Whole Wheat-Xtra Coarse	14%		yes			
Whole Wheat Pie & Pastry	10%		yes			
Bob's Red Mill						
Barley Flour Stone Ground	10%		yes			
Whole Wheat Flour Organic	12%	yes	yes			
Whole Wheat Pastry Flour Organic	10%	yes	yes			
Graham Flour Organic	13%	yes	yes			
Organic Buckwheat Flour	13%	*	yes			
Spelt Flour Organic	13%	*	yes			
Wheat Montana						
Spelt Flour	11%*		yes			
Essential Eating						
Organic Wheat Flour Sprouted Whole Grain	13%	*	yes			
Spelt Flour Organic Sprouted	10%	*	yes			
Pocono						
Buckwheat Flour-Light	10%		yes			
Buckwheat Flour-Whole Dark	12%		yes			
Baker's						
Baker's Nutri-Soy	53%					
Gulf Pacific						
White Rice Flour	7%					
Brown Rice Flour	8.20%					
Imported						
Coconut Flour	14*%		yes			
ConAgra						
Rye Flour- Dark	*		yes			
Bulk Foods, Inc.						
Yellow Corn Flour	6%		yes			
Grain Millers						
Whole Oat Flour	16%		yes			
Whole Oat Flour	16%		yes			

Guide to Flours:

Alternatives to Wheat

Flours are available from many non-wheat products:

Oat Flour

Whole oat flour is created by grinding kilned groats with the bran layers fully intact. Very light in texture and color, oat flour is an excellent addition to baked products because it makes them “fluffier.” Oat flour can replace as much as 50% of the wheat flour in baking recipes.

Nutri-Soy Flour

Nutri-Soy Flour is moderately heat treated and is best for use in baked goods and cereals. This soy flour can be used as a substitute for all purpose flour in many bakery or cereal applications or in meat processing as a binder.

Millet Flour

This flour has a subtle flavor, lots of vitamins and minerals, and adds a lovely creamy color to baked goods. Substitute 1/4 cup millet flour for an equal amount of unbleached white flour in any baked good recipe to add more nutrition and a unique flavor.

Barley Flour

This flour is 100% stone ground from the finest quality barley at Bob’s Red Mill. Barley flour has a moist, sweet, nut-like flavor and may be added to your favorite baked goods recipe (biscuits, pancakes, cookies, breads etc.) for additional flavor and nutrition. Substitute 1/3 cup of barley flour in place of your regular flour for an extremely tender product.

Potato Flour

Potato flour is ground from 100% dehydrated whole potatoes and is used in bread, pancake and waffle recipes or as a thickener for smoother sauces, gravies and soups. Also used in gluten-free cooking.

Brown Rice Flour

This flour is ground from unhulled rice kernels, also known as brown rice. Brown rice flour can be used as a flour substitute in many dishes, especially in combination with other flours. This flour is naturally gluten free, making it perfect for those who require a gluten free diet.

White Rice Flour

Rice flour (white) is milder, lighter and easier to digest than wheat flour. Use this flour as a substitute for people who are gluten intolerant. This flour is mainly used for making noodles, desserts and sweets and is also an excellent thickener for sauces, custards and gravies.

Sorghum Flour

America’s third leading cereal crop is sorghum flour, a millet-like grain. Gluten free white sorghum flour is a powerhouse of nutrition and adds a superb flavor to gluten-free baking. Add 15% to 20% sorghum flour to your flour mixes to make delicious cakes, cookies, and breads.

Teff Flour

Teff flour is made from ground teff grains and can be used like any other alternative flour. This flour is full of vitamins and nutrients like protein, fiber, iron and calcium and can be used to make baked goods such as pie crusts, cookies, and breads.

Yellow Corn Flour

Corn flour (lite roast) is fine ground, fine texture, light yellow flour. Unlike corn meal, this flour has not been roasted. Used in general baking recipes in combination with other flours because it has low gluten content.

Coconut Flour

Gluten free coconut flour is a healthy alternative to wheat and other grain flours. This flour is high in fiber and is also a good source of protein. Replace up to 20% of the flour called for in a recipe with coconut flour and add an equivalent amount of additional liquid to the recipe. Coconut flour can be used in baked goods to produce a rich texture and unique, natural sweetness.

Garbanzo Flour

Garbanzo bean flour is 100% stone ground and is popular in Middle Eastern cooking and baking. When replacing wheat flour in baked goods with garbanzo bean flour use 7/8 cup to 1 cup.

Tapioca Flour

Tapioca flour, also known as tapioca starch, is ground to a powdery fine granulation from dried cassava roots. It is a starchy and slightly sweet flour that is especially good for thickening soups, sauces, dips, pie fillings and puddings. Tapioca flour is also an excellent ingredient for gluten-free baking, as it lends a springy texture, promotes browning and makes crispy crusts.

Buckwheat Flour

Buckwheat flour is low in fat and sodium, contains no cholesterol and is an excellent natural source of fiber. Mix this flour with wheat flour, because it is low in gluten, to make breads or pastas. Use flour in all of your baked good recipes including cookies, cakes and muffins. It is especially great in both quick and yeast breads.

Quinoa Flour

This flour is one of the oldest cultivated grains in the world. Organic quinoa is high in protein, calcium and iron. You can substitute this flour for half of the all-purpose flour in many recipes or completely replace wheat flour in cakes and cookie recipes.

Amaranth Flour

Amaranth flour is gluten free flour originally from South America. Its cultivation, appearance and uses are similar to grains and can be used to replace 25% of the flour in your own recipes. It is 100% stone ground and great for gluten free baking when combined with another non-grain flour or starch. It’s especially high in lysine which is lacking in many grains.

Almond Flour

This simple flour is made with raw blanched whole almonds that have been ground into a fine powder. Use almond meal in your favorite cake, cookie, sweet bread and other dessert recipes.

Spelt Flour

Spelt flour is a wheat alternative that is accepted by many with a gluten allergy. This flour is 100% whole grain flour. While low in gluten it is not completely gluten free. When substituting in recipes use 20-25% more spelt flour than specified for wheat flour. It can also be used to make pasta.

Rye Flour

Rye is a grass grown extensively as a grain and forage crop. It is closely related to barley and wheat. Rye grain is used for flour, rye bread, or can be eaten whole, either as boiled rye berries, or by being rolled, similar to rolled oats. Gluten must be added to this flour for a soft loaf. The rye flour you find in the supermarket, labeled dark, medium or light rye flour, is degermed, with the dark flour containing more bran.