

Gluten Free Baking

Gluten Free Stevens Point Post-Meeting Summary - May 16, 2011

What is xanthan gum?

Xanthan gum is a thickening agent. Xanthan gum functions similarly to gelatin in recipes with regards to stabilizing suspensions and acting as a thickening/binding agent. Xanthan gum is fermented with corn; the amount is very small but some corn-allergic people may not be able to tolerate xanthan gum for this reason. Guar gum can be used in place of xanthan gum.

Xanthan gum is considered a polysaccharide in scientific circles, because it is a long chain of three different forms of sugar. What's important to know is that all three of these natural sugars are present in corn sugar, a derivative of the more familiar corn syrup. The *Xanthomonas campestris* bacteria literally eat a supply of this corn sugar under controlled conditions, and the digestion process converts the individual sugars into a single substance with properties similar to cornstarch. Xanthan gum is used in dairy products and salad dressings as a thickening agent and stabilizer. Xanthan gum prevents ice crystals from forming in ice creams, and also provides a 'fat feel' in low or no-fat dairy products.

Xanthan gum derives its name from the strain of bacteria used during the fermentation process, *Xanthomonas campestris*. *Xanthomonas campestris* is the same bacteria responsible for causing black rot to form on broccoli, cauliflower and other leafy vegetables. The bacteria form a slimy substance which acts as a natural stabilizer or thickener.

Cosmetic manufacturers add a very small amount of xanthan gum to their cream-based products in order to keep the individual ingredients from separating. Despite the use of bacteria during processing, xanthan gum itself is not generally harmful to human skin or digestive systems, though some individuals may find they are allergic to it. Xanthan gum is often used whenever a gel-like quality is sought.

Why is xanthan gum important?

Gluten is the protein that strengthens and binds dough in baking. Without gluten, items baked with gluten-free flours will not hold together. To simulate the "gooeyness" of bread, something must be added to gluten-free flour to help it hold together. Xanthan gum serves this purpose well. Adding different amounts of xanthan gum to gluten-free flour mixes creates different results. Breads rely heavily on gluten for their structure, cakes to a lesser extent, and cookies almost none. Typically the starchier and/or more refined the crumb, the less the reliance on gluten.

Bette Hagman, a pioneer in gluten-free baking, provides a good basic flour blend in her cookbooks that can be used in equal (1:1) substitution for regular wheat flours. Her gluten-free flour blend suggests that: For every cup of wheat-free/gluten-free flour, use 1 tsp. xanthan or guar gum for cakes, 2 tsp. xanthan or guar gum for breads or pizza, and 1 tsp. or no xanthan or guar gum or most cookies.

A suggestion from the meeting was to use ½ tsp. per cup of flour if your recipe includes baking soda or baking powder. Use 1 tsp. per cup of flour if you are not using baking soda or baking powder.

What is guar gum?

Guar gum is an extract of the guar bean. Guar gum is economical because it has almost 8 times the water-thickening potency of cornstarch - only a very small quantity is needed for producing sufficient viscosity. Thus it can be used in various multi-phase formulations: as an emulsifier because it helps to prevent oil droplets from coalescing, and/or as a stabilizer because it helps to prevent solid particles from settling. Measure carefully

when using guar gum in gluten-free recipes or you may end up with heavy, stringy baked goods.

Some gluten-free groups discourage the use of guar because of the higher fiber (and therefore possible laxative effect) of large amounts of guar gum use. Guar gum is used as a laxative. It is also used for treating diarrhea, irritable bowel syndrome (IBS), obesity, and diabetes; for reducing cholesterol; and for preventing “hardening of the arteries” (atherosclerosis). There is some interest in using guar gum for weight loss because it expands in the intestine, causing a sense of fullness. This may decrease appetite.

Gluten Free Flour

- Good flour article from Dec/Jan 2010 Living Without magazine: http://www.livingwithout.com/issues/4_1/gluten_free_flour-1073-1.html (explains how much of each type of flour to use and the results to expect from each type of flour)
- Good explanation of different types of flours: <http://glutenfreecooking.about.com/od/glutenfreeingredients/tp/20-Gluten-Free-Flours.htm>

Amaranth flour

Amaranth flour is made from the seed of the Amaranth plant, which is a leafy vegetable. Amaranth seeds are very high in protein, which makes a nutritious flour for baking.

Arrowroot flour

Arrowroot flour is ground from the root of the plant, and is very useful for thickening recipes. It is tasteless, and the fine powder becomes clear when it is cooked, which makes it ideal for thickening clear sauces.

Brown rice flour

Brown rice flour is heavier than its relative, white rice flour. It is milled from unpolished brown rice so it has a higher nutritional value than white, and as it contains the bran of the brown rice it has a higher fiber content. This also means that it has a noticeable texture, a bit grainy. It does have a slight nutty taste, which will sometimes come out in recipes depending on the other ingredients, and the texture will also contribute to a heavier product than recipes made with white rice flour. It is not often used completely on its own because of its heavier nature. Bulk buying is not recommended as it is better used when fresh, store in an airtight container.

Buckwheat flour

Buckwheat flour is not, despite its name a form of wheat, buckwheat is actually related to rhubarb. The small seeds of the plant are ground to make flour. It has a strong nutty taste so is not generally used on its own in a recipe, as the taste of the finished product can be very overpowering, and a little bitter.

Chick pea flour (also known as gram or garbanzo flour)

This is ground from chick peas and has a strong slightly nutty taste. It is not generally used on its own.

Cornflour (also known as cornstarch)

Cornflour is milled from corn into a fine, white powder, and is used for thickening recipes and sauces. It has a bland taste, and therefore is used in conjunction with other ingredients that will impart flavor to the recipe. It also works very well when mixed with other flours, for example when making fine batters for tempura. Some types of cornflour are milled from wheat but are labeled wheaten cornflour.

Alternative name: cornstarch.

Cornmeal

Ground from corn. Heavier than cornflour, not generally interchangeable in recipes.

Maize flour

Ground from corn. Heavier than cornflour, not generally interchangeable in recipes.

Millet flour

Comes from the grass family, and is used as a cereal in many African and Asian countries. It can be used to thicken soups and make flat breads and griddle cakes. Because it lacks any form of gluten it's not suited to many types of baking.

Potato flour

This flour should not be confused with potato starch flour. Potato flour has a strong potato flavor and is a heavy flour so a little goes a long way. Bulk buying is not recommended unless you are using it on a very regular basis for a variety of recipes as it does not have a very long shelf life.

Potato starch flour

This is a fine white flour made from potatoes, and has a light potato flavor which is undetectable when used in recipes. It's one of the few alternative flours that keeps very well provided it is stored in an airtight jar, and somewhere cool and dark.

Quinoa flour (pronounced 'keen wa')

Quinoa is related to the plant family of spinach and beets. It has been used for over 5,000 years as a cereal, and the Incas called it the mother seed. Quinoa provides a good source of vegetable protein and it is the seeds of the quinoa plant that are ground to make flour.

Sorghum flour

Sorghum flour is ground from sorghum grain, which is similar to millet. The flour is used to make porridge or flat unleavened breads. It is an important staple in Africa and India. This flour stores well under normal temperatures.

Soya flour

Soya flour is a high protein flour with a nutty taste. It is not generally used on it's own in recipes, but when combined with other flours is very successful as an alternative flour. Can be used to thicken recipes or added as a flavor enhancer. It needs to be carefully stored as it is a high fat flour and can go rancid if not stored properly. A cool, dark environment is recommended and can even be stored in the refrigerator.

Tapioca flour

Tapioca flour is made from the root of the cassava plant, once ground it takes the form of a light, soft, fine white flour. Tapioca flour adds chewiness to baking and is a good thickener. It's a fairly resilient flour, so storing at room temperature is no problem.

Teff flour

Teff comes from the grass family, and is a tiny cereal grain native to northern Africa. It is ground into flour and used to prepare injera, which is a spongy, slightly sour flat bread. It is now finding a niche in the health food market because it is very nutritious.

White rice flour

This flour is milled from polished white rice so it is very bland in taste, and not particularly nutritious. White rice

flour is ideal for recipes that require a light texture, for example our herby dumplings. It can be used on its own for a variety of recipes and has a reasonable shelf life, as long as it is stored in an airtight container to avoid it absorbing moisture from the air.

Making Flour Mixes

Jules Shepard in her book *The First Year: Celiac Disease and Living Gluten-Free* recommends the following: "If you decide to create your own flour mix recipe, recognize that when selecting from the many alternative gluten-free flours available, some are lighteners (usually starches), and other add bulk instead; you should be looking to create a mixture that does both. Your ultimate gluten-free mixture should have an approximate starch-to-flour ratio between 3:2 and 5:4, and you should add approximately $\frac{3}{4}$ to 1 teaspoon of xanthan or guar gum to each cup of flour mix."

Mixing your own flour mixture can be a bit messy. One thing that I found that works well is to put all of your measured flours into a ziploc bag. Seal the bag tightly and shake to combine the flours. I also found that sifting the flour before mixing it into your recipe works well.

Flour Mixes

- Mrs. Glee's Gluten Free Performance Blend Enriched Flour (contains whole navy bean flour) - <http://mrsgleesglutenfree.net/>
- Tom Sawyer All Purpose Flour - <http://www.glutenfreeflour.com/>
- Check for xanthan gum in your flour mixes. Xanthan gum is expensive and if the mix you purchase doesn't have it, you will need to add it.

Purchasing Flour

- White rice flour is inexpensive at Panda Market (1970 Post Rd, Plover)
- Whole foods - Madison and Milwaukee have many options
- The Co-op, Copps, and Trigs all carry several of the Bob's Red Mill flours

Grinding Your Own Flour

- Can be cheaper to grind your own flour.
- If doing a small amount, could use a coffee grinder.
- The Vitamix can be used.

Favorite Cookbooks

- Nearly Normal Cooking for Gluten Free Eating by Jules Shepard
- Cake Mix Doctor Bakes Gluten-Free by Anne Byrn featured in CSA Newsletter
- Cooking Free by Carol Fenster
- Cookbooks by Bette Hagman

Bread Makers

- You should use the quick rise setting for all gluten free breads. With the other settings the bread does not rise, becomes dense, and does not cook in the center.
- Breadman brand makes a machine with a gluten free setting.
- There is a gluten free bread machine (Bready) advertised in Living Without Magazine. You can learn more about this machine at www.mybready.com/csa.
- One individual recommended using a 59 minute cycle on their bread machine. They also found that Bette Hagman's 4 Flour Bread Recipe worked well.

Modifying Recipes to be Gluten Free

Everything can be done the same as long as you substitute the flour for an equal amount of gluten free flour. A well-chosen flour blend will lead to greater success than using one type of flour. For recipes where the main ingredient is flour, you can expect the final product to taste, look, and have a different consistency than the traditional version. You may want to consider finding a specifically tailored gluten free recipe for items such as bread, crust, cookies, etc.

Boxed Mixes

- Namaste (brown and purple paper bag) mixes were recommended at the meeting including the pizza crust.
- Betty Crocker
- Hodgson Mill cake and brownie mixes. The cake mix makes a 2 layer cake.
- Kinni-Kwik Bun Mix by Kinninnick - just add water

Gluten Free Kitchen Tips

- Wooden utensils and cutting boards can absorb gluten and hold crumbs. If they are not used exclusively for gluten free items avoid them.
- Keep a toaster that is only for gluten free items if you do not have a gluten free kitchen. The crumbs in a toaster can cause cross contamination.
- Use dishes, mixing bowls, cutting boards, utensils that can be put through the dishwasher to ensure they are clean if used with gluten containing foods.
- Keep gluten free items on separate shelves from gluten containing foods.
- Have two containers of any food that can be cross-contaminated by gluten eaters e.g., butter, peanut butter, jelly (anything that you stick a knife in and reuse). Label the gluten free version with a bright sticker to avoid mix-ups and help guests navigate your kitchen.
- Be vigilant about wiping counters, tables, etc. where crumbs tend to get scattered.

Is there a bakery that will mail fresh bread to me?

- Silly Yak in Madison ships gluten free bread - <http://www.freshglutenfree.net/>
- Outside the Breadbox in Colorado ships their products - www.outsidethebreadbox.com
- A dedicated gluten free bakery is opening in Oshkosh (Rustic Kitchen: <http://rustic-kitchen.com/>). Nutrition Discount Center (NDC) will carry the products as long as they are purchased often enough to stay fresh.

Money-saving tips for buying gluten-free items

Recommend signing up through your favorite companies' websites. For example, Udi's usually has coupons on their web site. Bakery on Main will e-mail coupons to individuals who sign-up.