CARLA'S GLUTEN FREE RECIPE BOX

Gluten-Free Bread Baking Defined

Ingredients and Their Effects
Methods
Troubleshooting
Recipes

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Learn to make great tasting gluten-free yeast bread with an incredible texture.

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Introduction

Perhaps you have been prescribed the gluten-free diet by your doctor or another medical professional because you have celiac disease, gluten intolerance, gluten sensitivity, or you wish to improve your overall health. Or perhaps you've decided to jump on the gluten-free bandwagon and open a bakery or other business. Either way, one of the first questions usually asked is how to make gluten-free bread that tastes good and can be used for sandwiches, but doesn't have to be toasted to enjoy.

When I first began my gluten free baking journey it was difficult to locate information on what effects specific flours and other ingredients had on baking. I kept experimenting and researching until I finally ended up with bread that closely resembled gluten bread. Therefore, it is my pleasure to share with you what I have learned, thus far. Gluten free baking is a never ending learning experience, but I hope to make yours easier than mine. Now I have many recipes to share with you.

Due to the lack of gluten in the flours available to you, you will no doubt fail in your attempts to make a good bread if you just use a single flour, or even an all-purpose gluten-free flour. There is much more to it than that. You not only need flour, but starch, gums, protein, fat, an acidic value and other dough enhancers.

Below you will find detailed information about how and why specific ingredients are used; method and length of mixing; trouble shooting tips; and more. I have included a basic sandwich bread recipe with many different ingredients for you to choose, and a link to all of my gluten-free bread recipes. Once you have read the information below you may even choose to experiment on your own. You'll be a pro in no time!

Gluten-Free Flours and Starches

There are many flours and starches available. The most commonly used starches are potato starch (not potato flour), tapioca flour or starch, arrowroot starch and cornstarch. Some of the common flours used in bread baking are sorghum, *gluten-free* oat flour, millet, white rice, brown rice, and buckwheat. Rice flour produces the highest rise. Corn and potato flour are also wonderful additions, but are best added in smaller amounts.

For additional fiber, protein or nutrition, adding a small amount, usually 1/4 cup, of heavier whole grain flour or other ingredients may be added with good results. These include: chia seeds, flax seed meal, teff flour, and Montina Pure Baking Supplement, all of which adds just a bit of a nutty flavor.

Bean flours such as soy, garbanzo, fava and garfava (garbanzo and fava flour), lend a better texture, adds structure and a leavening effect to bread. Use them in small amounts, as well, as most legume flours produce a bitter taste, some more than others. Fava is milder than the others. However, soy flour is the mildest. I do not use it because of its controversial issues about effecting estrogen levels in our body.

The most flavorful breads usually contain many different flours and starches. The one exception is the use of corn flour or starch. They provide much flavor. It is best to use a non-GMO brand. Bob's Red Mill brand is non-GMO.

Binders

To replace the elasticity missing from the gluten, you'll need to use some sort of binder to hold your dough together. For this purpose, gums are used: xanthan gum, guar gum, or some people like to use agar agar, gelatin or arrowroot due to additional food intolerances or allergies. The lighter the flour, the more gum needed. In most gluten-free bread recipes, 1 teaspoon of gum per cup of flour/starch mixture turns out bread with a nice chew, yet not too sticky. Without some sort of binder your bread may fall or be very crumbly.

Note: If you are intolerant to corn avoid xanthan gum, as it is corn based.

Fats and Oils

If your bread turns out too crumbly it may be lacking fat. You will need to use butter, margarine, a dairy-free substitute, cooking oil or shortening. Some home bakers just use yogurt, buttermilk, milk, or even unsweetened applesauce. Yogurt and buttermilk are especially good in yeast-free bread due to its acidic content. Using whole milk provides a creamy texture to the bread and additional protein to help in the rise, but it is not necessary when you use other dough enhancers. Using 1/4 cup fat (melted cooled butter, oil, applesauce, etc.) is sufficient in most recipes, unless you're making a brioche. Brioche is all about the butter!

If choosing to use oil or shortening, you'll want to use an oil that is neutral in flavor. If you decide to use extra virgin olive oil the flavor is not noticeable. Regular olive oil is a bit too heavy in flavor, but if you're after creating an Italian flair, such as in a flatbread, it would be ideal. Peanut oil, on the other hand, would not be appropriate for any bread.

Which oil you use should also be based upon the baking temperature called for in the recipe. Not all oils bake alike. Each has a maximum smoke point. A smoke point is the point in which

the oil begins to either smoke (in frying), change flavor, lose nutritional content, and/or becomes unhealthy for you[1]. Therefore, it is important to choose a fat that has the appropriate smoke point for the baking temperature called for in the recipe.

If choosing margarine over butter, note that margarine does not contain as much fat as butter, therefore, your bread may not turn out as moist.

See the smoke point for a variety of fats in the chart below which may be applied to all your gluten-free cooking and baking. However, different circumstances create different temperatures, but the chart below will provide you with a good idea of which to use.

Fat	Smoke Point[2]
Almond	420°F
Avocado	520°F
Butter	250 – 300°F
Butter, clarified[3]	450°F – 475°F
Canola, expeller pressed	375 – 450°F
Canola, refined	400°F
Canola, unrefined	225°F
Coconut, extra virgin and unrefined	350°F
Coconut, refined	392°F
Corn	450°F
Grape Seed	420°F
Lard	361 – 401°F
Olive	391°F
Olive, extra light	468°F
Olive, extra virgin	375°F
Safflower, refined	510°F
Safflower, unrefined	350°F
Safflower, semirefined	450°F
Sunflower, unrefined	225°F
Sunflower, semirefined	450°F
Vegetable Shortening	360°F

Other Dough Enhancers

A popular dough enhancer is apple cider vinegar. Because it has an acid value of 5% and contains pectin, it is preferred over other vinegars. Pectin is a natural dough enhancer. Most white vinegar brands usually contain 5% acid and would be your second choice. Rice vinegar

contains about 4% acidity. Other vinegars such as balsamic or wine vinegar would be inappropriate, mainly because of their flavor, though some may be higher in acidity level. You may use 1-2 teaspoons of vinegar per 3 cups of flour mixture, depending upon if you use another acidic ingredient such as buttermilk or yogurt. In this case you would use no more than 1 teaspoon, if not less. Using vinegar creates a lighter texture mainly by speeding up the process of rising. It works together with the yeast.

Another favorite dough enhancer is baking powder. It softens bread, including the crust, and helps in rising, but make sure you do not use more than about 1/4 teaspoon per loaf. Start with 1/8 teaspoon and increase from there each time you make the recipe. It is especially helpful for use in heavier whole grain breads. Some recipes call for baking soda. The difference between baking soda and baking powder is that baking soda starts working in the dough as soon as it is mixed with liquid, and baking powder performs most of its action in the oven, once heated. You may find that baking soda will create too much of a rise, too early, though it really depends upon the other ingredients. If using baking soda, adjust your salt amount accordingly, as baking soda is very high in sodium. And the recipe may call for additional yeast. Baking soda may inhibit the action of the yeast. Baking soda has its place, especially in yeast-free bread such as soda bread. Both soda and powder are definitely useful in heavier grained breads, in the correct amounts. I prefer baking powder. However, you really need to be careful in its use. It can cause a bread to fall a bit, but it definitely turns out a soft bread.

An additional option is using whey isolate powder, such as protein powder. Usually they contain lecithin which is used in commercial dough enhancers. This protein helps aid rising and adds structure.

Protein is very important in gluten free bread baking. Egg yolk not only contains protein, but lecithin. Lecithin is often used for binding gluten in gluten breads**.** In gluten-free bread baking, it acts as a preservative, adds additional protein, browning, moisture and a softer texture. Be careful to not use too many egg yolks or you will be baking a cake instead of bread. Egg whites are preferred, as they provide structure, a chewier texture, are lower in fat, produce a small amount of rise, and they will not cause your bread to overbrown.

Garlic powder is a wonderful dough enhancer, especially if you wish to roll or shape your dough. It is great for use in pizza dough, flatbreads, and of course, garlic bread.

Ginger powder may be used to provide yeast an additional boost. It not only helps during the rising period, but in the baking cycle, as well. You won't notice much of a change, but it does help a bit. You will find ginger as an ingredient in many commercial dough enhancers. Use about 1/8 teaspoon per loaf.

Preservatives

In addition to using some of the above dough enhancers, and considering the fact that gluten-free bread tends to stale quickly, adding a natural preservative is advised. Adding 1/8 teaspoon of Vitamin C, crushed or from capsules, to the flour mixture for each loaf will help in preserving it. It also acts an additional acidic value, aiding the yeast.

Other natural preservatives are sugar, vinegar and soy flour.

Most commercial bakers use modified ingredients (not usually natural) or enzymes especially made for their industry. Not too long ago, a product much like commercial bakers use became available to consumers. Whether you are a commercial baker or not, you may wish to try Expandex® modified tapioca starch. It not only adds shelf-life to baked goods, but creates a gluten-like dough which also works well in any dough you wish to roll, enhances rise, and provides a better texture. You can learn more about Expandex at expandexglutenfree.com.

Liquids

Of course you will need to add a liquid. Water is usually sufficient. Another option is to use club soda or sparkling water. They help assist the rising process and create more of those little holes, making the bread lighter. You'll want to use carbonated water at room temperature. And you will need to balance out other bubbly ingredients such as vinegar, using no more than 1 teaspoon per loaf when making a yeast loaf. It is also advised not to use baking soda or baking powder when using carbonated water in yeast loaves.

If you use milk, or better yet, buttermilk, (has a high acid value) your bread will brown faster. You may need to tent it with foil during baking to prevent over-browning. Milk provides additional protein which is always welcome in gluten-free baking, and it adds a creamy flavor. When using dairy-free milk consider using one that is high in protein such as soy or almond milk. Protein is needed in gluten-free bread due to the lack of gluten and gliadin proteins found in gluten flour.

Yeast

Many people are confused about which type of yeast is best to use. They all basically work the same. Active, rapid rise, instant, premium instant, and bread yeast all result in risen bread. Active dry yeast just takes longer for the dough to rise. But there really isn't any specific type of yeast that works better than others.

Fresh yeast, also known as baker's yeast or cake yeast, is used by many bakers, but in gluten-free bread baking, dry yeast is the best to use. Instant yeast will produce the same results as fresh yeast in less time (no additional rising needed) and has a much longer shelf life. One package of dry yeast or 2 ¼ teaspoons is sufficient in most recipes. You may use a little less in lighter breads such as rice bread. When using active dry yeast use half the amount you would use when using instant or rapid rise.

Sugar and Sweeteners

Some sort of sugar is needed to help activate the yeast. Whether you use a liquid or granule, the same effect occurs. I have used honey, sugar, molasses, agave nectar/syrup, evaporated cane juice granules, brown rice syrup and a combination thereof, achieving the same result. And there is no need to adjust the dry ingredients in the recipe if you use a liquid sweetener, as you only use a small amount, 2 teaspoons to 2 tablespoons. Sugar or any of the above ingredients create moisture and a softer texture. Honey, brown rice syrup and molasses create the softest texture; the thicker the sweetener the softer the texture. If the texture is too soft, just increase the gum in the recipe a bit.

Is there such a thing as too much sugar? Yes. Too much sugar may inhibit yeast growth. Note: Do not use a diet sugar, as this will not aid the yeast process at all.

You can help give the yeast process a head start by proofing your yeast. Proofing yeast is a way of telling if your yeast will actually work, or if it is too old to its job. Add the sugar and yeast to warm water or milk, and never heat your liquid over 115°F. If you do, you may kill your yeast.

Some recipes call for proofing the yeast in a very small amount of water. I find that if you heat all of the water or milk in the recipe and proof it in the entire amount the yeast is better distributed throughout the dough.

Sugar is also found in carbohydrates, and is the reason why we use starch in gluten free baking. You may find that using water from boiled potatoes of assistance in your bread recipes, as it also gives yeast a good boost.

Salt

Salt is needed mostly for flavor, but it also helps control the activity of the yeast. Therefore, if you have a bread recipe that is too fragile from over rising, added salt may correct this. Then a

recipe that is high in sugar, consider using less salt because, as stated earlier, sugar also inhibits yeast growth.

Mixing

An electric mixer is the best method for making gluten-free bread. Because the best gluten-free bread dough is soft, kneading is not necessary. The dough is more like a batter. The more powerful your mixer, the better bread you will turn out. The mixing creates a gluten-like substance. All of my recipes are made using a 325 watt KitchenAid mixer. If you have a less powerful mixer, mix the dough longer.

Since gluten-free flour is lacking gluten, mixing a longer period of time than is needed to blend the ingredients is necessary. If you mix the batter 1-5 minutes it will create a good bread. I have found 1 minute to be sufficient for most ingredients, though 3 minutes achieves about the same effect. The length of time will vary depending upon the combination of your ingredients. When using xanthan gum, you can over mix bread dough. Therefore, be careful not to go overboard on the mixing or your dough could become runny. If using agar agar, additional mixing may be necessary. Again, it all depends upon your other ingredients.

In commercial baking many manufacturers add baking enzymes to lessen the time of mixing, therefore, they are able to create more products in less time. These enzymes may also help create light-weight bread with more volume. Expandex® modified tapioca starch is an excellent substitute.

Time Saving Tip

Once you have discovered your favorite combinations of ingredients make a large batch and store it in an air-tight container. This will make your gluten-free bread baking a breeze!

Note: It is best to store your mix and flours in the refrigerator or freezer, and then bring it to room temperature prior to use.

Problems

Below you will find a few troubleshooting tips to assist you in determining what may have gone wrong with some of your gluten-free breads. Keep in mind that sometimes a recipe is just bad.

Did Not Rise

- Heated the liquid too much; never heat over 115°F
- Yeast is too old
- Used too much salt and/or sugar
- Did not place the dough in a warm environment
- Not enough starch

Did Not Rise Enough

- Not enough liquid
- Not enough: yeast, baking powder, vinegar, sugar.
- Not enough dough – increase the ingredients

Bread Falls Upon Cooling

- Too much liquid
- Under baked
- Over risen – (about 1/2" above the top of the pan is usually sufficient)
- Too much leavener: yeast, baking powder, baking soda, vinegar, etc.
- Uneven baking temperature

Too Crumbly

- Needs more starch and/or fat (oil, butter, etc.)
- Needs more gum or binder
- Did not mix long enough
- Was baked at too low a temperature

Gummy or Too Heavy

- Did not bake long enough – Often individuals stop the baking when the bread becomes brown, however, this is not an indication of when bread is fully baked. Temperature is not an indication either, as it varies depending upon your ingredients. Though, if you wish to use this method 190-210°F is a good range.
- Too much gum, agar agar, etc.
- Added too much of the heavier grains
- Did not preheat the oven

Loaf Pans

Sometimes it is difficult to bake gluten-free bread all the way through in a 9x5" loaf pan. If this is the case, bake it in an 8x4" or 9x4" pan. You may also need to reduce the liquid. Smaller loaves cook all the way through more easily. And depending upon the amount of dough, you may need to adjust the recipe down a bit if your recipe calls for a 9x5" pan.

You will find that professional bakers tend to use silver pans versus black. They are used because they create an even temperature environment for baking and reflect heat versus absorbing it.

Pullman pans are silver in color and are very durable. They are made of aluminumized steel, contain steel wire reinforcements, have a corrugated surface which allows for more browning and even baking, and are coated with an eco-friendly silicone coating. The coating does not contain PTFEs or PFOAs which many people avoid nowadays. Most pans come with lids, but without a lid is also available. The purpose of the lid is to force the dough to rise with a flat top, creating square slices of bread. However, the lid is not very useful in gluten free bread baking, as most bread dough is soft and just sticks to the lid. Though the lid may come in handy for any dough you desire to refrigerate overnight. It is my experience that it creates a thicker, harder crust because of the additional browning. You may wish to bake your bread at a lower temperature when using a Pullman. Because of its durability, this pan would probably outlast any other loaf pan. They are available in 9x4x4", 9x5x5", 13x4x4" and 16x4x4 sizes. The smaller the pan the higher chance your bread will bake all the way through.

Many manufacturers are now making mini loaf pans. These make wonderful bread because of their small size.

Most ceramic loaf pans have a wide lip at the top which may create an unusual mushroom shape of your bread slices. However, this is a good choice for those who wish to steer away from non-stick Teflon pans, aluminum and other coatings.

Reminders for the Gluten Intolerant

- Remember to always read labels, as ingredients change often.
- Contact manufacturers when you have any doubt about gluten cross-contamination.
- Spray oils or non-stick oils may contain gluten.
- Oats are not gluten-free, unless it is labeled as such.

Summary

Now that you have read the scoop on gluten-free bread baking, it's time to give it a try! Below you will find my favorite dairy-free, gluten-free, sandwich bread recipe which provides a number of alternative ingredients. Or you may wish to start experimenting on your own. You may also find additional gluten-free bread recipes on my blog. If you have any questions regarding recipes, please do not hesitate to email me, or join me on my social media networks: Facebook Twitter Pinterest.

Basic Gluten-Free Sandwich Bread Recipe

- 1 cup water, heated to 110°F
- 2 Tablespoons agave syrup/nectar, sugar, evaporated cane juice, molasses or honey
- 1 packet or 2 1/4 teaspoons dry yeast (instant, bread, or fast acting)
- 1 1/4 cups light-weight gluten-free flour
- 1 1/2 cups gluten-free starch (2 varieties is best)
- 1/4 cup seeds, meal or additional gluten-free flour
- 2 teaspoons xanthan gum (most contain corn), (or more guar gum)
- 1 teaspoon guar gum (or more xanthan gum)
- 3/4 - 1 teaspoon fine sea salt (or salt)
- 1/4 teaspoon baking powder (optional)
- 2 teaspoons gluten-free apple cider vinegar (I use Heinz)
- 4 large egg whites, at room temperature
- 1/4 cup extra virgin olive oil
- Gluten-free cooking spray oil or cooking oil, for pan
- 2 teaspoons gluten-free oats or seeds for topping + 1 egg white + 1 T. water (optional)

Directions

1. Oil or spray oil a 9×5" loaf pan.
2. Preheat oven to 170 – 200°F (lowest possible).
3. Mix warm water with your sweetener of choice and yeast in large cup or bowl, and set aside until foamy on the top, about 5 minutes.
4. Whisk together the dry ingredients; set aside.
5. Beat egg whites at high speed in a large mixing bowl until bubbly, about 20-30 seconds.
6. Add oil, vinegar and yeast mixture to the egg whites and blend on low, just until blended.
7. Add dry ingredients all at once and blend for a short time until all dry ingredients are moistened. Then change speed to high and beat for 1 minute.
8. Add dough batter to prepared pan and pat with a little cold water using a rubber spatula or your fingers. Distribute the dough evenly to meet all sides of the pan and smooth out the top. Do not be cautious on using too much water, as it this will help the bread brown. If you add too much drain any excess from the pan.
9. Set the pan in the preheated oven on the center rack. Close the oven door and allow the dough to rise until it is about 1/2 - 1" over the top of the pan, about 40 minutes. If using active yeast it will take longer.
10. Remove the pan from oven and preheat oven to 375°F.
11. Place the pan on the center of the rack in the center of the oven and bake for about 37 – 45 minutes or until the dough reaches 205°F.
12. Remove the pan from the oven and immediately remove the loaf from the pan; and set the loaf on a cooling rack to cool completely.
13. Slice with an electric slicer, electric knife or serrated knife.

References

1. Wikipedia (2010). Smoke Point. Retrieved on June 3, 2012.
2. Good Eats (2010). Cooking Oil Smoke Points. Retrieved on June 3, 2012.
3. About.com. Cooking Oil Smoke Points. Retrieved on June 3, 2012.