

# Bread Making Class Notes

## Basic Bread Ingredients and Why They Are Important

- Water – Water is extremely important. It hydrates all the dry ingredients and creates the infrastructure for pliable dough. It activates yeast. It regulates temperature of the dough. Water quantity determines the final amount of dough.
- Salt – Not only is salt a seasoning to enhance the flavor of the bread, it also helps retard yeast growth. It also tightens the gluten structure, enabling the dough to rise more efficiently and give the bread a finer texture.
- Sugar – Sugar feeds the yeast, allowing for fermentation to take place at a higher rate. Breads made without sugar feed the yeast by breaking down starches in the flour.
- Oil – Oil affects texture, moisture content, aeration, and tenderness of the bread. It also is a factor in browning (along with salt and sugar).
- Flour – Flour not only provides structure and nutrition, it also provides the proteins that produce gluten. Gluten is created when the flour proteins, gliadin and glutenin, combine to form the polymer we call gluten. In a well-developed dough, gluten is evenly distributed through the dough mass, and acts kind of like bubble gum. As the entrained yeast ferments and gives off gas, that gas is collected within the matrix of gluten. Well developed gluten captures a lot of small bubbles. With poorly developed gluten or over-developed gluten the bubble wall structure breaks, combining small bubbles into large bubbles, or simply not capturing the gas. This is a feature highlighted in artisan breads, which are generally coarser breads. Gluten in artisan bread is developed by raising the bread twice and letting the yeast action develop it. In a finer bread, gluten is best developed by kneading in a shearing action.
- Yeast – Yeast is kind of the star of the show. As yeast reproduces and ferments the dough, it produces carbon dioxide (yes, a greenhouse gas!) which is captured by the gluten infrastructure to cause the bread dough to rise and the final bread to be a network of bubbles.

## Tips

- Yeast should be kept dry. The reason for storing yeast in the refrigerator or freezer is to keep it dry...not cold. Yeast is technically a fungus, neither plant nor animal, and respire out carbon dioxide as it reproduces.
- Bread should rise ideally in a moist environment in the temperature range of 75 – 85°F.
- Gluten is best developed by kneading the bread in a shearing or scraping motion. This is why a mixer with an annulus bowl is more efficient than a regular bowl mixer.

## Substitutions

- Milk can be used instead of water. The added milk solids give a lighter texture and a nutrition boost to the bread.

- Yeast can be substituted for with baking soda and lemon juice or vinegar, or baking powder. This really changes the texture and flavor of the bread, though.
- Wheat flour can be changed out with any number of other grain flours or nut flours, but they generally lack the gluten component that allows the bread to rise. That is why gluten free bread is such an art form. Gluten can be replaced with other ingredients such as yeast or eggs. You will probably want to use a high protein flour like sorghum or millet. The use of psyllium husk powder can mimic the chewy, flexible texture of gluten. Gluten-free bread is generally more delicate in texture and can dry out faster than gluten bread, so needs to be properly cared for.

You can also use sprouted wheat as a wheat substitute. To make sprouted wheat flour, you need to soak the wheat seeds (or berries) overnight. By morning, they should have a hint of a sprout sticking out of the seed. This is all the sprouting you need to do, so dehydrate the seeds (low oven or dehydrator) and then you can mill the wheat like regular wheat. Sprouted wheat has a higher vitamin content and a lower gluten content, so recipe adjustments need to be made to account for loss of gluten.

## Links

Byutv.org – watch the [Chef Brad videos](#). He focuses on using whole grains (a lot of different ones) in bread and lots of other foods. I think Chef Brad has retired his web site, but he has cookbooks available and, of course, the videos on the BYU channel.

YouTube – search for [artisanbreadwithstev](#). Steve makes artisan bread that doesn't require any kitchen machine and makes a wonderful, crusty bread.