

CHEF'S HANDBOOK

for the
Artisanal Bread Baker



EDITED BY CHEFS AT TRUFFLE NATION



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BASIC UNDERSTANDING OF BREADS

The baking process can be defined as a natural and logical succession of steps that will ensure the proper transformation of basic ingredients into a loaf of bread.

Bread making is a combination of art and science, apart from the good quality of ingredients, the temperature and the environment has a large role to play in the making of the final product.

Baking bread begins with combining the appropriate ingredients as outlined in a formula. Bakers combine various ingredients to make a wide variety of breads. Selecting the right ingredients makes the difference between producing excellent breads and poor quality breads. Any significant change in ingredients will affect the final product quality and customer satisfaction.

A strong understanding of how individual ingredients function and how they interact in a dough system is critical.

The most basic and ancient bread formulas consist of flour, water, salt, and yeast. From that basic formula, thousands of varieties have been created. Breads may include ingredients such as milk, eggs, various fats, fruits, nuts, sweeteners, etc.



TOOLS AND EQUIPMENTS USED

1. SIEVE

A sieve is used to sift all the dry ingredients so as to get rid of any unwanted particles or impurities that may be present. It also breaks any lumps and provides aeration to the flour. A drum sieve with a fine mesh is most widely used.

2. WEIGHING SCALE

A digital scale is recommended as it can provide exact measurements as accuracy is most important.

3. MIXING BOWLS

Though any bowl can be used but a big glass bowl is a preferred choice as it provides room for proofing of dough and also provides a clear view.

4. DOUGH SCRAPER

It is used for shaping and cutting the dough. It is very useful if one is working directly on the counter as it can be used to combine back all the scattered ingredients. A strong steel dough scraper should be chosen over a loose plastic one if one is working with a more hydrated dough.

5. OVEN THERMOMETER

Although every oven has its own way of showing the inside temperature, but it is a good idea to invest in an oven thermometer as it gives more accurate readings of the inside temperature of an oven.

6. KITCHEN THERMOMETER

When it comes to checking the doneness of breads, it is the best tool one can have as it can easily give the inside temperature of a baked bread.

7. COOLING RACK

It is as important as any other tool, as after baking the bread, it is very important to cool down the bread on a cooling rack so that the bread gets air circulation from all sides.

8. LOAF PAN

Also known as Bread tins, these are required to bake the bread in a particular shape. One can have a loaf pan of any shape, be it rectangular or round. But make sure it is sturdy one which can handle the pressure of dough while proofing without changing its shape.

9. BREAD KNIFE

To cut the bread loaves, only a bread knife should be used as it has serrations which can easily slice a loaf without crumbling or breaking it.



10. OVEN MITS

A good quality oven gloves should be used which has extra padding or even silicon oven gloves can be used to prevent burns on hand.

11. OVEN TRAY

An oven tray is used for making loaf of breads without any tin or mould. A sturdy good quality tray should be preferred.

12. PROOFER

Mostly used where large quantities of bread is being made, it helps the bread to proof at a faster rate without making the dough dry as these comes with an option to control humidity.

13. OVEN

An oven can be of any kind, Deck, OTG or convection, but one has to ensure that it has both upper and lower rods to facilitate even baking.



ROLE OF INGREDIENTS IN BREAD MAKING

Every ingredient used in the making of bread has a particular role to play in achieving the final, desired product. These ingredients however perform only when certain conditions are met and are highly dependent on each other to perform that particular function to the desired level.

1. FLOUR

Wheat flour dough has the unique ability to retain the gas produced during yeast fermentation or by chemical leavening. The flour is responsible for the characteristic structure of bakery foods. Wheat flour is the key ingredient in most breads. Flour quality is particularly important in bread making as the quality of the flour will have a significant impact on the finished product. When flour is moistened and stirred, beaten or kneaded, gluten develops to give dough 'stretch'. The elastic framework of gluten holds the gas produced by the fermentation action of yeast.

2. WATER

The main function of water is hydration. Ingredients must have water in order to function as expected. For example, flour must be hydrated in order to form gluten and for the starch to gelatinize. Water also serves as a dispersing agent and a medium for fermentation. There is a direct relationship between the amount of water present in a dough system and the rate of fermentation. The amount of water in flour is called hydration and is measured in percentage with regards to flour.

3. YEAST

Yeast is a living organism which can be affected by storage practices, dough temperatures, pH, availability of water, and food supply. Of these control points, the most important is temperature. Yeasts are microorganisms that convert sugar into alcohol and carbon dioxide.

Yeast's primary function in a bread dough is to provide leavening. It contributes to flavor and aroma through fermentation. Several forms of yeast are used: **Active dry yeast, Instant yeast, Compressed yeast, or Natural yeast**. The type of yeast used depends on the volume of product.

Home bakers or small retail bakers may use a form of dry yeast since refrigeration is not necessary, and the shelf-life is fairly long. **Active dry yeast** needs no refrigeration and has 2-12 months storage life, depending on packaging. Active dry yeast must be rehydrated with water at 105-110°F (40-43°C) for about 10-15 minutes before use.

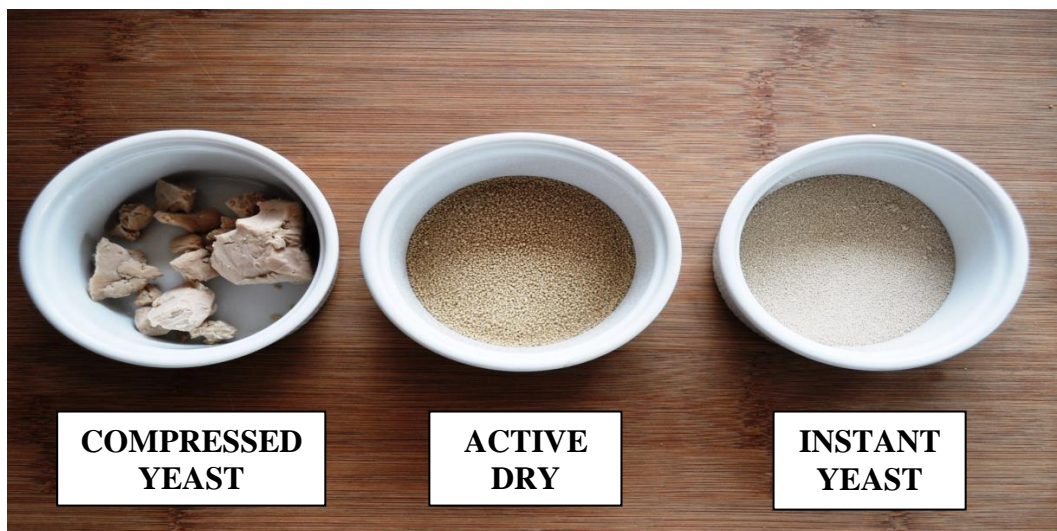
For **instant yeast**, no refrigeration is required and storage life is one year or more due to packaging in inert gases or under vacuum. Once the package is opened, it is recommended that it be used within three days. Instant yeast is extremely convenient since it does not have to be hydrated prior to use unlike active dry yeast does. It may be added directly with the other dry ingredients and blended, or delayed until no loose water is visible in the dough.



There are 25 Percent more living yeast cells per teaspoon in Instant yeast than in an equal amount of active dry yeast and there are three times more living cells than in an equal amount of fresh compressed yeast,

Compressed yeast is commonly used in retail bake shops as well as in large wholesale bakery production. It can be purchased in many sizes, from 1-pound cakes to 50-pound bags. The general water content of compressed yeast is 70% and is highly perishable outside of refrigerated storage conditions of 36-45°F (2-7°C).

Yeast performs other functions in addition to leavening. During fermentation, yeast converts fermentable sugars such as maltose, glucose, fructose, and sucrose into carbon dioxide and alcohol, which generates heat. A baker can judge fermentation by monitoring the increase in temperature. Flavors are generated by the acids that are created during fermentation. Acids also mellow the gluten which can reduce the energy requirements to fully develop a dough.



4. SALT

Salt brings out the flavor in baked goods. Salt is typically used at levels of 1.50-2.25%. Bread made with less salt will taste blander, and bread made with more than 2.25% salt will taste salty.

In addition to adding flavor, salt also inhibits fermentation due to the osmotic pressure effect, which is the partial dehydration of the yeast cell. Salt also toughens the gluten. Weak flours can be strengthened by adding salt. Salt lengthens mixing time, so it is common to delay the addition of the salt until the end of the mixing process. When the addition of salt is delayed, the toughening effect is also delayed, and mixing time can be reduced by 10-20%.

5. SUGAR

The main functions of sugar is to provide food for the yeast and give a sweet flavor to the finished product. In normal bread production, 3-3.5% fermentable solids are required for



yeast activity. This food supply can come from added sugar, conversion of starches to sugars, or a combination of both.

Sugar is not an essential ingredient. Secondary functions of sugar are all related to non-fermented (residual) sugar. When residual sugar levels are higher, crust color is darker, taste is sweeter, and moisture retention is improved due to the hygroscopic properties of sugar.

Flour naturally contains about 2.5-3% of sugar in the form of sucrose and maltose. This is enough for the yeast in the initial stage of fermentation. However, in the final proof when maximum of the sugar is required to be broken down for an optimum rise, the natural sugars are exhausted and the addition of sucrose or maltose is required.

6. BREAD IMPROVER

It is blend of ingredients that activate the gluten and assists in improving the processes of dough kneading and fermentation. This results in a lighter loaf with better texture and keeping qualities. It also improves the crumb structure making the bread lighter and soft.

7. GLUTEN POWDER

It is almost pure gluten, blended in a powdered form. When added to the dough it improves its elasticity and also improves the crumb and chewiness of the final bread. It can be added to any recipe but is mostly preferred when baking with low protein flour or when its difficult to form the gluten, like in whole wheat flour.

8. OIL/FATS

Fats and oils are used in bread production to provide overall lubrication and to aid with slicing. A minimum of 0.7-1% is recommended for good slicing, although some bakers use less than this in low-calorie breads, and higher levels of 2-5% in richer bread products.

Besides lubricating the baked crumb, fats and oils also lubricate the dough, easing dough expansion and helping with the handling of the dough throughout the makeup processes. They also tenderize the crumb and improve shelf life by delaying staling.

7. MILK

Milk solids are used in bread formulas for many reasons, and they offer a wide range of functionality. Milk is high in lysine and calcium, and the overall nutritional quality of the milk protein is excellent.

Milk solids also impart a rich flavor to a finished product. They also create a deeper crust color which can contribute to an improved flavor profile. In addition to finished product benefits, milk solids provide function and benefit to dough processing. Milk is an excellent buffer, so milk solids can slow or regulate fermentation. They also strengthen the gluten matrix, which improves overall process tolerance.

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