**Baking Ingredients:**

**Yeast:**

Yeast is **Saccharomyces cerevisiae** commonly known as baker's yeast. It is derived from Italian word . **Sacchar** means “Sugar” and **myces** means “mold” . It acts as leavening agent. Yeast feeds off of starch (sugar) when heated and made moist, releasing bubbles of CO2 which allow whatever you are baking to rise

**Saccharomyces cerevisiae**:

* It is responsible for fermentation reaction as a result of fermentation it consumes sugar and produce carbon dioxide and ethyl alcohol.
* Carbon dioxide produces causes the dough to rise and is responsible for leavening of the dough.
* Fermentation process produce ethyl alcohol and different organic acids like lactic acid, acetic acid and butyric acid.
* The organic acid produce improves the flavor and nutrition value of the fermented product
* Fermentation also produces propionic acid which acts as a preservative and increases the shelf life of baked products.
* These acids reduce the PH of the dough also act as preservative.

**Types of yeast:**

There are different types of yeast these include

**1-Dry yeast**:

* It is also called as baker’s yeast.
* This yeast is available in freeze dried form.
* This type of yeast needs to be activated prior to the use
* For activation purpose the yeast is dissolved in gently warm water with the addition of the some sugar for 15-20 minutes
* This type of yeast has longer shelf life and produce quality bread with reasonable volume

**2-Instant yeast:**

* **I**t is most widely used yeast for bread making
* It is used for large scale production
* This is most concentrated type of yeast
* It does not require any activation because it is already activated and directly used in the recipe
* It is preferred by the industries due to time saving
* Bread produce from this yeast has improved volume and texture.

**3- Fresh Yeast:**

* It has the moisture content more than 70%
* This type of yeast has a short life due to high moisture content and difficult to handle
* It is not recommended for the industrial use and is least concentrated type of yeast
* It is good for small scale or lab scale baking

**4-Dead Dry Yeast:**

* This yeast is used for flavoring and nutritional purpose.
* The yeast activity is killed by exposing the yeast to higher temperature and it has zero leavening capacity.

**Sugar:**

C6H12O2 2C2H5OH + 2CO2

* Sugar is important for the yeast activity or sugar act as food for the yeast.
* Yeast consumes sugar and produce carbon dioxide and ethyl alcohol this process is called fermentation.
* As sugar is important for the fermentation process
* Sugar also acts as sweetener and improves the taste and flavor
* It is being hygroscopic in nature and absorb the moisture and in the absence of sugar the dough will be wetty
* It gives brown colour to bakery products as a result of caramelization and Millard reaction
* It also improves the grain and texture of bread.

**Salt:**

* Itis a major ingredient. we add salt because it is used for taste and flavor
* It gives strength to the gluten
* It is being hygroscopic in nature and absorbs the water and in the absence of salt the dough is slacked and wetty.
* It also controls the fermentation process and salt keep an eye on fermentation and thus prevent the dough to get over fermentation
* Salt along with sugar also plays an important role in the development of appetizing golden brown colour of crust
* It also acts as a preservative
* Salt should be added more than 2-2.5% and the salt addition depends upon the flour, as weak flour requires more salt and strong flour requires less salt.

**Baking Powder**

“Baking powder is a dry chemical leavening agent in baked goods and actually a mixture of **sodium** **bicarbonate (NaHCO₃)** and a **weak acid** with an inclusion of a **buffer such as corn starch”.**

Baking powder is used to increase the volume and texture of the bakery products. The buffer is added in it to avoid the reaction of acid and base (NaHCO₃ + weak acid). It is basically baking soda to which an acid and a filler is being added. Baking powder doesn’t require any liquid acid for its action because acid is already present in it.

**Baking Soda:**

***“****Baking soda is simply* ***sodium bicarbonate (NaHCO₃)*** *that is often called as* ***‘bicarbonate of soda’*** *or* ***‘baking soda”***

It is a chemical compound in the category of salt that is composed of a sodium cation and a bicarbonate anion. Baking soda is a **white solid** that is basically **crystalline** and appears as a **fine powder** commonly. As baking soda is a base and requires a liquid acid to react and produces carbon dioxide.

**TYPES OF BAKING POWDER:**

There are six types of baking powder named as;

1. **Tartrate baking powder**
2. **Phosphate baking powder**
3. **SAS baking powder**
4. **Single-acting baking powder**
5. **Double-acting baking powder**
6. **Kosher for Passover baking powder**

* **Tartrate Baking Powder:**

This type of baking powder basically uses the **Cream of Tartar** and **Tartaric acid** as the dry acid in the powder that can quickly react when a liquid is added. This is a quick process as the carbon dioxide escapes so the products cooked with tartrate baking powder must be cooked quickly because if carbon dioxide escapes, product with not be leavened and go flat with low volume.

* **Phosphate Baking Powder:**

In this type of baking powder, **calcium phosphate or disodium pyrophosphate** is being used in the place of acid in the baking powder. This will further react with a liquid for action. Phosphate baking powder is slower than tartrate baking powder.

* **SAS Baking Powder:**

Sodium aluminum sulfate (SAS) Baking Powders uses the sodium aluminum sulfate as the dry acid with sodium bicarbonate in the baking powder. SAS reacts slowly at the room temperature and initiated by heat. Excessive quantity of SAS can give a bitter taste in the baked product so it is used in very small quantities.

* **Single-Acting Baking Powder:**

This is a basic baking powder in which baking soda is added with a buffer and a dry acid (usually cream of tartrate) sometimes through a phosphate. It reacts very quickly as it releases carbon dioxide as soon as it is made wet in the mixing bowl so we need to put the dough quickly in the oven with no delay before the bubbles of carbon dioxide escapes.

* **Double-Acting Baking Powder:**

This type of baking powder is very popular and most commonly used. If there need baking powder in a recipe, that surely means double-acting. It is similar to single-acting baking powder but the only difference is that double-acting baking powder contains two dry acids instead of only one dry acid in the single-acting baking powder. The first acid reacts with the liquid during the process of mixing and the second reacts when heated. So a good leavening process occurs. There are two reactions occurring in the whole process that’s why it is called as ‘double-acting’ baking powder.

The second acid is sodium aluminum sulfate (SAS). This process results in a more flexibility in the product. Double-acting baking powder starts releasing carbon dioxide at a temperature of about 110 and 145F (43 and 63℃).

**Kosher for Passover Baking Powder:**

In this type of baking powder, that is kosher for Passover, we use potato instead of the corn starch as it has high binding capacity.

**WHY BAKING SODA SHOULD NOT BE USED ALONE?**

As baking soda is simply sodium bicarbonate (NaHCO₃) that is actually alkaline in nature. If it is added alone in the baking process, it could neutralize the acid and product will lose tanginess. It creates an alkaline environment. It also produces NaCO₃ that is washing soda and ultimately it gives a soapy taste in the product that is undesirable. So that’s why baking soda is not recommended and baking powder is used commonly that is baking soda in addition with a weak acid and a filler (buffer) like corn starch or potato starch.