Understanding Ingredients for the Canadian Baker

The BC Cook Articulation Committee

BCCAMPUS
VICTORIA, B.C.

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Yeast in Baking

The Functions of Yeast

Yeast has two primary functions in fermentation:

- To convert sugar into carbon dioxide gas, which lifts and aerates the dough
- To mellow and condition the gluten of the dough so that it will absorb the increasing gases evenly and hold them at the same time

In baked products, yeast increases the volume and improves the flavour, texture, grain, colour, and eating quality. When yeast, water, and flour are mixed together under the right conditions, all the food required for fermentation is present as there is enough soluble protein to build new cells and enough sugar to feed them.

Activity within the yeast cells starts when enzymes in the yeast change complex sugar into invert sugar. The invert sugar is, in turn, absorbed within the yeast cell and converted into carbon dioxide gas and alcohol. Other enzymes in the yeast and flour convert soluble starch into malt sugar, which is converted again by other enzymes into fermentable sugar so that aeration goes on from this continuous production of carbon dioxide.

Proper Handling of Yeast

Compressed yeast ages and weakens gradually even when stored in the refrigerator. Fresh yeast feels moist and firm, and breaks evenly without crumbling. It has a fruity, fresh smell, which changes to a sticky mass with a cheesy odour. It is not always easy to recognize whether or not yeast has lost enough of its strength to affect the fermentation and the eventual outcome of the baked bread, but its working quality definitely depends on the storage conditions, temperature, humidity, and age.

The optimum storage temperature for yeast is −1°C (30°F). At this temperature it is still completely effective for up to two months. Yeast does not freeze at this temperature.

Other guidelines for storing yeast include:

- Rotating it properly and using the older stock first
- Avoiding overheating by spacing it on the shelves in the refrigerator

Yeast needs to breathe, since it is a living fungus. The process is continuous, proceeding slowly in the

refrigerator and rapidly at the higher temperature in the shop. When respiration occurs without food, the yeast cells starve, weaken, and gradually die.

Yeast that has been frozen and thawed does not keep and should be used immediately. Freezing temperatures weaken yeast, and thawed yeast cannot be refrozen successfully.

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Using Yeast

Many bakers add compressed yeast directly to their dough. A more traditional way to use yeast is to dissolve it in lukewarm water before adding it to the dough. The water should never be higher than 50°C (122°F) because heat destroys yeast cells. In general, salt should not come into direct contact with yeast, as salt dehydrates the yeast. (Table 10 indicates the reaction of yeast at various temperatures.)

It is best to add the dissolved yeast to the flour when the dough is ready for mixing. In this way, the flour is used as a buffer. (Buffers are ingredients that separate or insulate ingredients, which if in too close contact, might start to react prematurely.) In sponges where little or no salt is used, yeast buds quickly and fermentation of the sponge is rapid.

Table 10 How Yeast Reacts at Different Temperatures

Temperature	Reaction
15°C–20°C (60°F–68°F)	slow reaction
26°C–29°C (80°F–85°F)	normal reaction
32°C–38°C (90°F–100°F)	fast reaction
59°C (138°F)	terminal death point

Never leave compressed yeast out for more than a few minutes. Remove only the amount needed from the refrigerator. Yeast lying around on workbenches at room temperature quickly deteriorates and gives poor results. One solution used by some bakeries to eliminate steps to the fridge is to have a small portable cooler in which to keep the yeast on the bench until it is needed. Yeast must be kept wrapped at all times because if it is exposed to air the edges and the corners will turn brown. This condition is known as air-burn.