



# DOUGH SYSTEMS

A guide on formulating sponge and dough, preferments & straight dough systems



**BAKER**  
— pedia —  
Lin Carson, PhD



Thinking about putting in a new line, product extension, or even a new product?  
Wondering if there is one dough system that is superior to the others?

**The truth is that there isn't.**

If you're targeting an aromatic final product, then the sponge and dough system is the best for flavor and open crumb structure. If you want a process with less capitalization, more versatility and higher rates of throughput, then pick the straight dough system.

**The sponge and dough** method is the most-used method for commercial bread production in the U.S.



## Advantages

- Less mixing time and energy
- Most versatile method in bread production from the production of artisan bread to hamburger buns
- Increases aroma, flavor and shelf life



## Disadvantages

- More floor space required
- Longer processing time from mixer to packaging
- Higher labor costs

**Straight doughs** require all the ingredients of the formula to be placed into the mixer and mixed until full development.



## Advantages

- Easier to start production without early preparation of the sponge or preferment
- Less labor needed
- Tighter and more uniform crumb



## Disadvantages

- More mixing time and more utilization of energy in the mixing process
- Dough needs more conditioners to relax and be machinable. This is not label friendly to the current clean label trend.
- Difficult to create artisan type products

# 4

## FLOUR PREFERMENT

The **flour preferment** uses a small portion of flour in the starter liquid sponge. This method is a compromise between straight dough and a sponge and dough.



### Advantages

- Crumb is more open than straight dough, and more uniform than sponge and dough
- Uses less floor space than a sponge and dough system
- Best system for a continuous mixing system



### Disadvantages

- More labor intensive compared to water preferment when it comes to labor and cleaning
- Requires more capital investment than water brew as larger capacity heat exchangers and holding tanks are needed.
- Less flavor intensity than sponge and dough system



This is also known as a flour-free ferment, water brew or a no time dough. The yeast is given a head start by mixing with water and sugar to ferment, then held in a holding tank and dispensed when needed. This method holds little advantage over a straight dough method.



## Advantages

- Less labor is involved because it is easier to mix up a brew than mixing up a sponge
- Tighter and more uniform crumb compared to sponge and dough
- Less capital needed for equipment purchase upfront as compared to a sponge and dough system



## Disadvantages

- More mixing time and utilization of energy compared to sponge and dough system
- Not versatile with formula changes
- Not very different from a straight dough method

Mostly used in an artisan environment, which utilizes the straight dough method undermixed and bulk fermented for over 60 mins.



## Advantages

- Flexible in scheduling when equipment fails, as the remixing of the dough allows for it to 'rejuvenate'
- Good for high water absorption dough, as it becomes less sticky and more machinable after the floor time
- 50% less production time compared to a conventional sponge and dough process



## Disadvantages

- Takes up floor space depending on the length of the bulk fermentation
- More labor is required at the mixing station



**Get the  
eBook!**

# **Dough Systems Handbook**

Thinking about putting in a new line, product extension, or even a new product? Use this tool to help you determine what you would want to implement in your bakery, why it works and how to do it. [Get it here!](#)