

SHELF LIFE TESTING

We recommend that you engage a Food Safety Consultant to help you through the process of negotiating the various regulatory requirements of food manufacture. The following are some general tips and guidelines for helping you to determine the shelf life of your products, but do not replace the expertise of a consultant.

For shelf life testing we need to test the product at the end of the stated shelf life in order for you to prove that the product is "safe" at the stated shelf life.

There are a couple of ways to go about this, and really the final decision is yours as to which way you go.

Firstly you do need to have some sort of idea as to how long you think or hope the product will last.

The way that you determine the acceptable date is for the lab to test on that date. i.e. if you want a 1 week shelf life the lab will test a product that is 1 week old.

The result of that testing will go one of two ways - either it will show that the results are acceptable, or that the results are higher than acceptable.

Usually manufacturers would choose to test their products on a number of occasions/dates up to and including the desired end of shelf life, with each subsequent test date being on a slightly older product (i.e. testing at various points during the shelf life), and from that set of results you can determine where the actual shelf life sits. The more test dates you do, the better the data set you have, but the more expensive it will be for you, as each test date is treated as a separate sample by the lab, and so there are costs incurred each time the lab does a test.

What are the Options?

Option 1 - Cheapest

Test on one date only (i.e. at your desired shelf life only).

This is the lowest cost option for you, but it is the higher risk. If the tests show that the results are not acceptable on that one test date, then you are back to square one.

This might be acceptable for products that have a short shelf life as it's relatively easy to start again and test on a shorter date.

For products with a longer shelf life I wouldn't recommend this as you may lose significant time by not targeting the right date at the outset.

I also wouldn't usually recommend this sort of option unless you are **absolutely certain** that the shelf life will be achieved (e.g. for highly stable or preserved type products).

We wouldn't recommend this type of one-shot approach for perishable products such as meat, dairy, seafood fresh goods etc, or for products with a longer shelf life.

Option 2 – Best Practice

Test on a number of dates up to and including your desired end of shelf life.

This is lower risk. If the product doesn't make it to the end of your desired shelf life you will hopefully have data from amongst the other test dates to show you what the actual date when the results show the product is no longer compliant.

e.g. if a product has a desired shelf life of 14 days, you might decide to test Day 10, 12, 14. Or you might test at Day 7, 10, 12, 14. If it's not OK at day 14, you can still see if it was OK at day 12 etc.

Each test date does incur a cost to you, so the more dates you test on, the more expensive the overall cost will be.

We always also recommend that a test is done at Day 0 (Date of Manufacture), or as close to DOM as possible.

Particularly for new products that haven't had much or any testing done before this will give you a good idea as to the microbiological quality of the product right from the outset.

If your results are high at the very start of the shelf life (immediately after manufacture), this could indicate that the product may struggle to achieve your desired shelf life.

If you don't make it to the end of your desired shelf life, or possibly if you don't even get close to it, this result from Day 0 can be very useful. If the Day 0 result is high, that may indicate that the process used to manufacture the product in the first place is not very well controlled, and may need some attention.

Adding a Day 0 test is of course up to you, but is recommended.

What should you test for?

The Microorganisms that you should test for to determination of your shelf life will be somewhat dependent on the product that you are manufacturing, as some organisms are considered to be higher risk in certain types of food. The price of your testing will be driven by the organisms that you need to test for, and there's no one-size-fits-all approach to shelf life testing.

How much sample do you need to send to the lab?

This is dependent on the microorganisms you need to test for (the lab needs a different amount for each test). It is required that you supply a separate individual item for each test date. Once a packaging is opened the shelf life is compromised, so we can't go back to that same pack to test again at the next required test date. e.g. if you decide to test on 3 different dates, you will need to supply 3 separate packs to the lab (one for each test date). Usually approx 100g per pack would be sufficient, but this could differ dependent on the testing required, so you are best to get confirmation from the lab.

How should you send samples to the lab?

The samples should be submitted to the lab under the same conditions that you expect the product to be stored. If you have a product that needs to be chilled you need to ensure that the lab receives the samples chilled. If the product is shelf stable at room temp, you can supply the samples at room temp. If the product is exposed to elevated temperature during transit to the lab this could have a detrimental effect on your lab results.

What if you want to also know about the shelf life of the product once opened?

This is essentially another whole different shelf life verification process. Be aware that you should determine your opened shelf life based off a "worst case scenario". i.e. if a customer held your product till the end of the shelf life before opening it, how long will it last after it has been opened. How long a freshly manufactured product will last might be very different to how long it will last at the end of shelf life

What else is important?

It is important that you also judge the aesthetic qualities of the product when deciding on your final shelf life. i.e. the taste, odour, appearance, texture etc. These are not tests that the lab can perform for you as they are highly subjective. Our lab staff are experts in performing laboratory analyses, but we are not qualified to judge the aesthetic qualities of your product. You are the expert on your product, so you need to be the one to determine if the aesthetic quality of the product meets your expectations, and the expectations of your customers. You need to use both the aesthetic qualities (as judged by you) and the microbiological lab results (supplied by the lab) to determine your shelf life.

Example 1: The lab provides you with a microbiological report that contains data showing the product is microbiologically compliant (safe) at 3 weeks old, but you may have determined that the texture and appearance don't meet your expectations by the time the product reaches 2 weeks of age. From an MPI food safety perspective you could assign a shelf life of 3 weeks, but if you know the product is "aesthetically not OK", you would be likely to assign a shorter shelf life.

Example 2: You have held the product in your fridge for 2 weeks and you think it still smells, tastes and looks great after 2 weeks or more, BUT the lab results show that microbiologically the product is no longer considered safe at 10 days old. You MUST assign a shelf life of less than 10 days. e.g. If you only did testing at 7 days (results were acceptable) and at 10 days (results unacceptable) you cannot set a shelf life date longer than 7 days. **IMPORTANT:** The microbiological data from the lab takes precedence over your aesthetic testing when setting your shelf life date.