



Microbial Testing and Process Monitoring

Microbial monitoring is one of the easiest and most effective tools for a brewery to ensure product quality.

What is the purpose of micro monitoring?

Testing is used to verify that the final bottled product is free of contamination and will be microbially stable. Micro testing can determine what organisms are present in wine and at what concentrations. Selective media can be used to determine specific strains in some cases. The effectiveness of sanitation procedures can also be tested. Microbial monitoring should be part of each breweries capabilities along with its other analytical and beer testing procedures.

We use costly outsourcing, is it more economical to perform this testing in-house?

Absolutely. Many outsourcing labs charge breweries anywhere from \$50 to over \$100 for testing that can be accomplished in-house for as little as \$2 in consumables and minimal upfront costs.

What would you recommend for my brewery?

There is considerable variability among test equipment used by breweries. There are a few different possibilities:

1. Filtering flasks



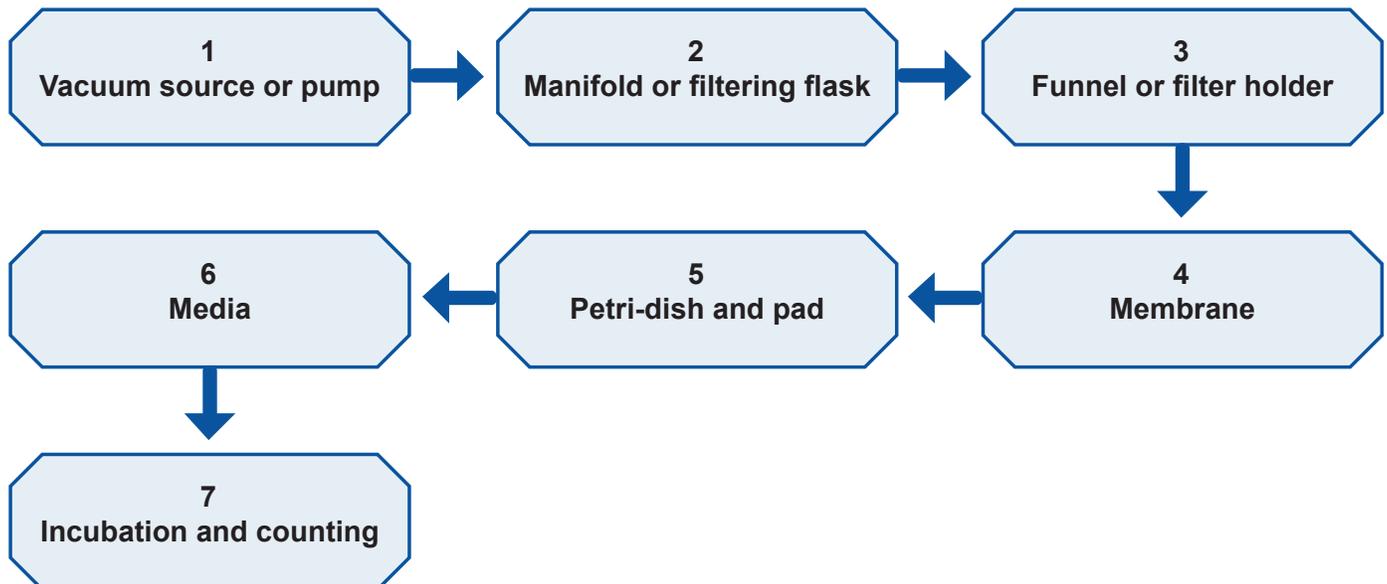
2. Traditional stoppered manifolds



3. Flat / custom manifolds



Each of these setups may be used with a variety of re-useable and consumable products. It is often easiest to think of micro plating as a process with various steps as shown below.



Is it possible to combine steps?

Yes, there are many products which combine several steps or product types to speed up and simplify plating. For example, MilliporeSigma's EZ-Stream pump handles liquid directly and eliminates the need for a trap flask when pulling vacuum. The Monitor 55+ is a funnel with pre-loaded membrane, a petridish and pad that can easily be adapted to flasks or manifolds with rubber stoppers. The EZ-Fit line features a funnel with a pre-loaded membrane, with the option of a petri-dish and pad that is aseptically joined to the EZ-Fit Manifold. The Petri-Pad line of petri-dishes come pre-sterilized with a cellulose pad already inside.

How should I choose my membrane?

The most common membrane for micro plating is the 47-mm 0.45 μm MCE membrane. This replicates the pore size that is most commonly used on the bottling line. Membranes are available in different colors with white being the most common, followed by black which can be used to easily see yeast colonies. Membranes with a gridded print can allow easier counting of colonies. The sterility and format of the membrane is one of the most important choices in micro monitoring. Membranes are available in non-sterile bulk packs, single wrapped pre-sterilized disks (S-Pak), and pre-sterilized bands for autodispensers (EZ-Pak). It is recommended to use pre-sterile disks for micro-plating to eliminate the risk of contamination from the membrane.

How should we decide between disposable and re-useable consumables?

The average cost per micro plating test is about \$2, up to as much as \$5, depending on the ease of use and number of disposable products used. Pre-sterilized disposable funnels eliminate the need for water baths, lowers false positive results, and saves time, however will cost more versus re-useable funnels. Presterilized and assembled units, such as those units with a membrane incorporated into a funnel, save time and reduce risk but also increase the consumable costs. 2-ml selective ampoules are more expensive than dehydrated media but come ready to use without mixing, storage, and risk of contamination. A winery must weigh these savings and decide the best solution for their operation.

Through our partnership with MilliporeSigma, Gusmer has access to a wide array of microbial monitoring and testing products. Please contact your local Gusmer Enterprises representative to start monitoring your process today.

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