

Beer spoilage organisms

Microbiology solutions.
Ensuring quality, protecting taste.

An effective laboratory QC/QA program executed throughout brewing workflows helps maintain uniformity of manufacturing processes and ensures consistency of final products. This safeguards the taste profile, product safety, and overall quality of beer.

Although the antibacterial qualities of hops reduces growth of most microorganisms, some bacteria, yeasts, and molds can reproduce impacting the flavor, odor, and appearance of beer. This infographic explores some common spoilage organisms and their impacts on beer.



Gram-positive bacteria

Lactobacillus and **Pediococcus** are often referred to as lactic acid bacteria and are undesirable in most beers, accounting for 60-90% of contamination events. These organisms can cause beer to taste sour and off-flavor, and result in a hazy appearance.



Taste



Appearance



Gram-negative bacteria

Pectinatus and **Megasphaera** are obligate beer spoilers. They may metabolize components of the beer, such as sugars, proteins, or other compounds, producing compounds that negatively affect taste and cause an unpleasant aroma.

Zymomonas frequently found on brewing equipment produce a sulfury flavor and turbidity.



Taste



Appearance



Smell



Wild yeast

Wild yeast such as **Brettanomyces** and **Saccharomyces** refers to strains of yeast that are not intentionally added to the fermentation process. They can produce haze and off-flavors due to differences in ester, fusel alcohol, and diketone production.

Saccharomyces cerevisiae var. diastaticus can ferment more sugars than standard brewing yeast resulting in over-carbonation.



Taste



Appearance



Smell



Molds and fungi

Molds such as **Aspergillus**, **Fusarium**, **Penicillium**, **Ascomycetes** can produce off-flavors that are typically earthy or woody.

Some molds and fungi produce mycotoxins. These are toxic compounds that can be harmful if consumed.



Taste



Toxicity



Microbiology solutions

The most common method to determine the presence of these organisms is to filter samples throughout the brewing process to isolate potential bacterial contamination.

This method, commonly known as the membrane filter (MF) technique, allows for precise and accurate quantification of microorganisms in a liquid sample. Membrane filters can be selected based on their pore size, allowing for the isolation of specific microorganisms.

Cytiva offers a broad range of filters and hardware for use in microbiological quality control. Microbiology workflows differ across laboratories based on the number of samples to be processed, size of the laboratory, number of technical personnel, and risk of sample-to-sample cross-contamination.

We offer both reusable and ready-to-use disposable microbiology products to suit your lab's needs.

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