



# Preventing contamination in packaged beer

Successfully producing and packaging safe, delicious beer requires careful oversight and accurate testing.

## [pH] pH and alkalinity

- + Mash, boil, and fermentation—essentially, everything that precedes canning—all impact pH.
- + An imbalance in pH can be a sign of undesired organisms or infection.
- + Water's alkalinity balances the other ingredients' acidity to keep pH in the right range.
- + Prior to packaging, low pH is targeted for its ability to inhibit bacterial growth.

## [O] Oxygen and dissolved oxygen

- + Oxygen is critical to beer production—yeast needs plenty of it.
- + For packaged beers, the presence of oxygen will cause staling and impact flavor.
- + Measuring DO (dissolved oxygen) is an important part of tracking yeast activity.
- + Carbon dioxide or other inert gas is injected just before the can is sealed, thereby replacing oxygen in the headspace at the top of the can.



## [IBU] Bitterness, color, turbidity

- + Unwanted microbes can lead to turbidity and altered taste.
- + Haze and turbidity are carefully tested and tracked throughout the filtration and maturation processes.
- + A range of additional parameters are also tracked prior to packaging, including bitterness (IBU value), alcohol, color, diacetyl levels, and FAN nutrients.
- + During fermentation, some molecules lose color as pH lowers, causing the overall color to lighten slightly.
- + In general, darker beers have higher pH than lighter-colored beers, and lagers have slightly higher pH than ales.

## Microbes

- + The microbiological stability of a packaged beer is key for proper flavor.
- + Incubators and agar plates (at 37°C for 24 hrs) provide an easy way to check for simple microbial presence and avoid contamination.
- + When the beer itself gives inconsistent results, it is heated in a shaker (37°C for at least 8 hrs) to promote microbial growth before testing.
- + To ascertain whether contaminants are undesirable, unknown microbes growing on the agar plates can be sent to an outside lab for genetic sequencing.

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