



HPP for original taste and stability



Gentle – fast - innovative

High-pressure processing (HPP) gives the possibility to ensure microbiological stability and lock the “fresh-like” aroma and flavour of unfiltered beer without heat or additives. Treatment with high hydrostatic pressures extends the shelf life of unfiltered beer to four times while retaining chill haze and stabilizing foam. Varying pressure level can be applied even to fit genuine beer notes like bitterness or to preserve or intensify added flavours.

The advantages at a glance:



Longer shelf life – original taste - energy efficiency

HPP inactivates *Saccharomyces cerevisiae* ascospores after fermentation of beer more efficiently than thermal treatment by using double less energy.

Longer freshness and improved microbiological quality extend shelf life. It facilitates distribution and helps to reach new markets.



Minimize post-contamination risk

Hydrostatic pressure acts uniformly and instantly throughout the product. It prevents product deformation and ensures sophisticated inactivation of spoilage microorganisms. And a big plus: the products are treated in their final packaging so there is no recontamination e.g. from filling.



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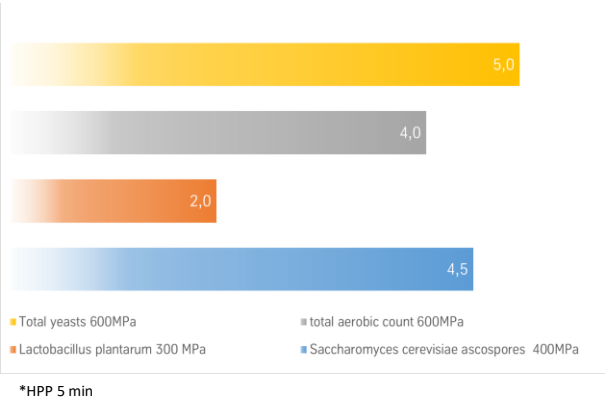
Microbial stabilisation

Treatment with high hydrostatic pressures between 250 and 600 MPa inactivates spoilage yeasts and bacteria in unfiltered beer within couple minutes.

Stabilization effects of HPP on spoilage microorganisms after fermentation are similar to heat treatment.

HPP can be used to stabilize a variety of unfiltered beers like Pilsner lager beer, pale and mild ales.

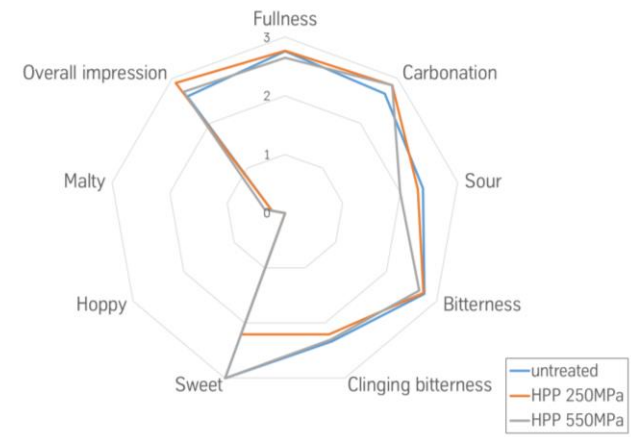
Microbial log reductions unfiltered beer ~ 5vol% alcohol



Sensory scores of HPP unfiltered beer within 2-month storage

The intensity of some sensory attributes (e.g. bitterness, sweetness) are related to pressure level as well storage time and temperature.

This allows for tuning the intensity of the aroma and flavour notes according to consumers' preferences.



*Overall impression (1= very good; 5 = very poor), other parameters (0=not present, 5=very strong) (Štulíková et al., Molecules 25 (2020) 2414)

Quality and Packaging

HPP doesn't alter inherent attributes of unfiltered beer like colour, pH, phenol content or ethanol content.

High-pressure treatment inactivates enzyme pro-A, which contributes to better foam stability of the unfiltered beer.

At the same time, HPP beers treated to 600 MPa have lower protein sensitivity and similar chill haze compared to thermally treated ones

HPP works well with commercially available, flexible packaging e.g. PET bottles or kegs.



Innovation – New markets

The rise of the functional beverage sector has influenced the popularity of aromatized and wellness beers with less or no alcohol.

HPP can be used to stabilize functional, non-alcoholic beers with superfood components (berries, seeds, fruits, cereals, etc.).

As a non-thermal treatment, HPP preserves functional ingredients like electrolytes, antioxidants, vitamins, flavors, etc. in aromatized and wellness beers.



High added value products