

Brewtan® B

>>> Natural solution for combined flavour & colloidal stability of beer
Application fact-sheet

>>> INTRODUCTION

Nowadays, physico-chemical beer stabilisation is essential, as colloidal and flavour stability is considered worldwide as a quality label of beer, both among brewers as consumers. Beer should be enjoyable to drink, have a delightful flavour, attractive colour and good clarity even after transport to the other side of the world or after storage for months in supermarkets.

Our experience in many projects shows that the combined use of Brewtan® B at mashing-in and end of boiling is in almost every case study the best solution.

Brewtan® B is a high quality tannic acid grade which can be used in both mashing-in and at end of boiling. Brewtan® B provides the advantages of both approaches. Dissolved in the mash water it increases the anti-oxidant power, inhibits LOX-activity and acts as a metal chelating agent. This results in a remarkable increase of flavour stability. Due to its flocculation capacity the filterability in the lautertun of the wort can increase by up to 30%. After addition at the end of boiling or during transfer to the whirlpool it reacts with the more acid proteins in wort, increases the hot-break during boiling, whirlpool yield with a more compact cone and improves the anti-oxidant power of the beer and colloidal stability.

The combined application increases both flavour and colloidal stability of the beer.

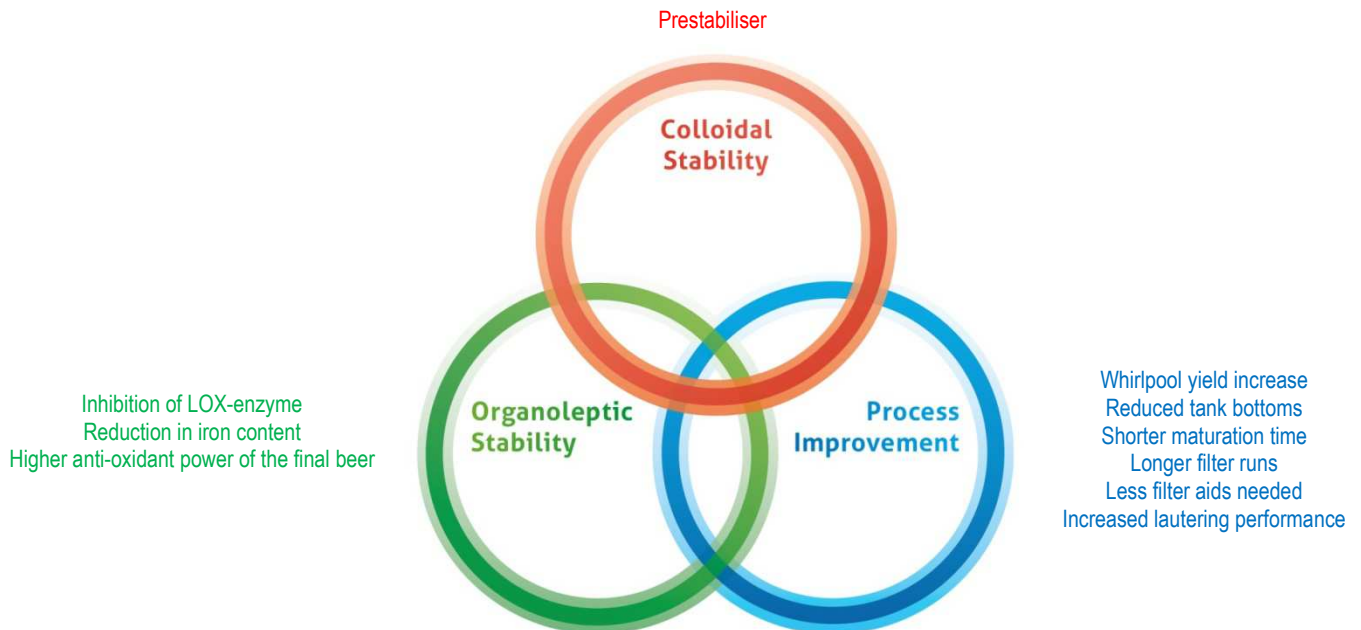


Figure 1.: Properties of Brewtan® B

>>> COMBINED APPLICATION: MASHING-IN AND END OF BOILING

>> Practical implementation

Required equipment

Stainless steel equipment is recommended because dissolved iron from ordinary steel equipment forms a dark blue complex with gallotannins.

The use of Brewtan® B at the end of boiling does not require specific equipment, and investments are negligible, except when Brewtan® B is dosed to a wort boiler under pressure or proportionally during transfer to whirlpool.

Preparation, dosing & sequence of addition

Typical dosage levels of Brewtan® B at mashing-in range between 1 – 2,5 g/hl and at end of boiling between 1 – 3 g/hl. Brewtan® B usage is expressed relative to the amount of final 100% malt 12°P beer. The amount of added adjuncts and the gravity of the beer have to be taken into account.

Clear solutions can be obtained by slowly adding Brewtan® B to the brewing water while stirring to prevent lumps. We recommend a concentration of 10%, lower concentrations lead to high addition volumes and higher concentration solutions increase the risk of local overdose.

For mashing-in this Brewtan® B solution should be added to the mashing water - stir to homogenize - just before adding raw materials

For boiling this Brewtan® B solution is added to the copper just (5-10 minutes) before transfer to the whirlpool (or centrifuge) or proportionally during transfer to the whirlpool. It is important that the Brewtan® B solution is completely mixed with the boiled wort in order to obtain a good pre-stabilisation.

Impact of raw materials

Malt with a protein content of 9-12% is good brewery malt, lower than 9% gives foam problems, more than 12% gives very unstable beers. Malt with high nitrogen content gives a lower brewhouse yield, will result in more soluble proteins and thus also more haze formation in the final beer. Brewtan® B can help to correct fluctuations in malt quality by eliminating these excessive amounts of proteins.

>>> IMPACT OF BREWTAN® B USE

>> Impact on colloidal stability

Amount Brewtan® B	Fresh (EBC)	Forcing test 6 days 60°C 1day 0°C (EBC)
0 g/hl	1,40	2,51
3 g/hl mashing – 4 g/hl g boiling	1,05	1,19

Results of forcing tests show a much greater colloidal stability, over 50% increase, for beers treated with Brewtan® B (3 g/hl mashing-in; 4 g/hl boiling). Even before accelerated ageing we can see that the initial haze of the fresh beer is already better in Brewtan® B treated beer.

Table 1.: Forcing test results 6 days 60°C, 1 day 0°C

>> Impact on organoleptic stability

Impact on reducing or anti-oxidant power assessed by ESR

The antioxidant power is measured from the beginning of the process, as T150 values are lower, anti-oxidant power increases. The amount of Brewtan® B used in this test is 2 g/hl mashing-in and 1 g/hl end of boiling.

The treated beers have a better anti-oxidant power throughout the entire brewing process.

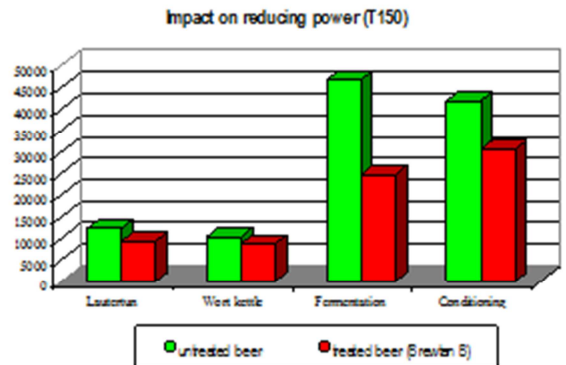


Figure 2 : impact on reducing power

Impact on shelf life assessed by ESR

Lagtime values are partially correlated with shelf life. Higher lagtime values indicate a longer shelf life of the beer. The use of Brewtan® B can impart an increase of almost 50% in beer stability.

Average lagtime values of treated beer Brewtan® B (min)	Yearly average lagtime values untreated beer (min)
75-80	53

Table 2.: Impact on shelf life

>> Impact on process improvements

Several case studies in breweries have shown following benefits of Brewtan® B at mashing and end of boiling:

- Mashing
The filterability of the wort increases, thus increasing lautering capacity.
- Boiling
An increase in hot break and the possibility to decrease or eliminate copper finings.
- Whirlpool
The yield of the whirlpool increases, clearer worts after whirlpool are obtained, the dryness of the whirlpool cone is 5 - 15% better and the cone itself is more compact with approximately 10% higher dry material.
- Maturation
Reduced bottoms in cylindro-conical tanks and shorter maturation times. Less bottoms means less beer loss and resulting in added savings as bottoms have to be tankered away. Shorter maturation times represent an increase in maturation capacity.

- Filtration

Increased length of filter runs and decrease in the amount of filter aid needed. Longer filter runs mean less filter operations, less CIPs translating in less energy consumption and operational hours and thus more filter capacity. Less filter aid means a saving in raw material cost and disposal cost.

Overall there is a reduction in processing aids, stabilisers and filter aids. It can be used in combination with PVPP and new filtration technologies.

>>> OVERVIEW

Figure 3. shows the different ways of incorporating gallotannins into the brewing process. This allows brewers to choose the most appropriate product for their requirements; it is also possible to combine two or more of these methods to give a combination of process and stability benefits.

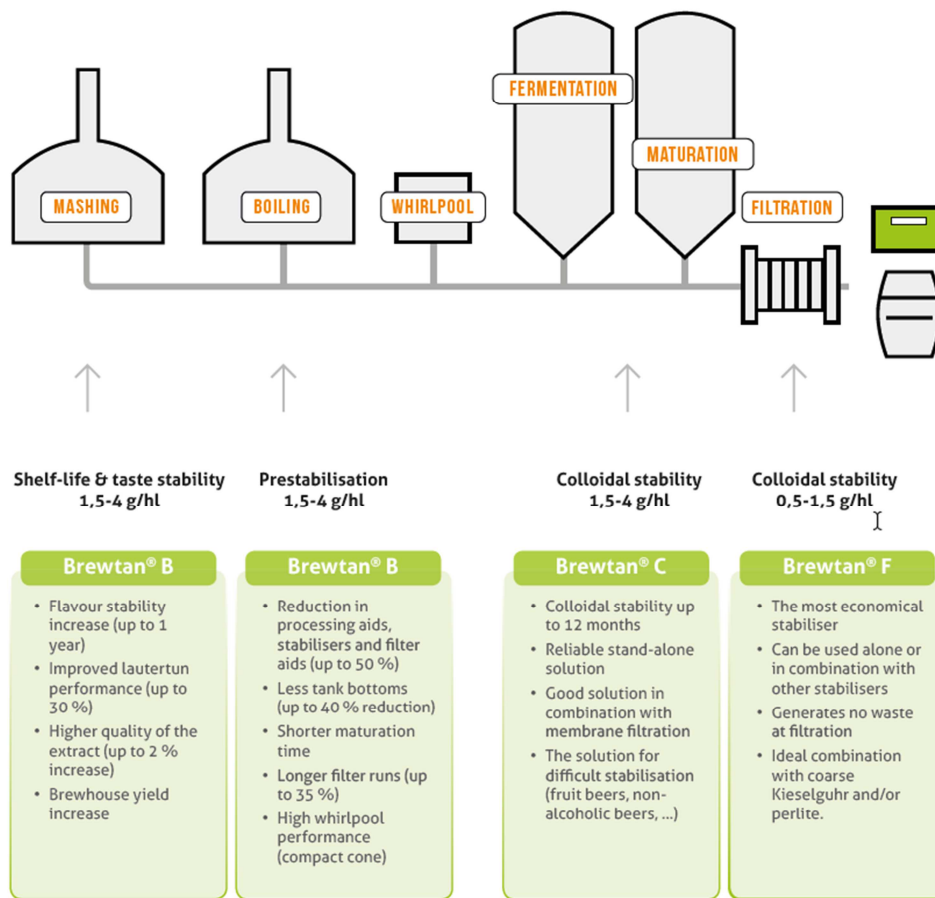


Figure 3.: Brewtan®, your natural beer stabiliser

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