



BrauSol Special

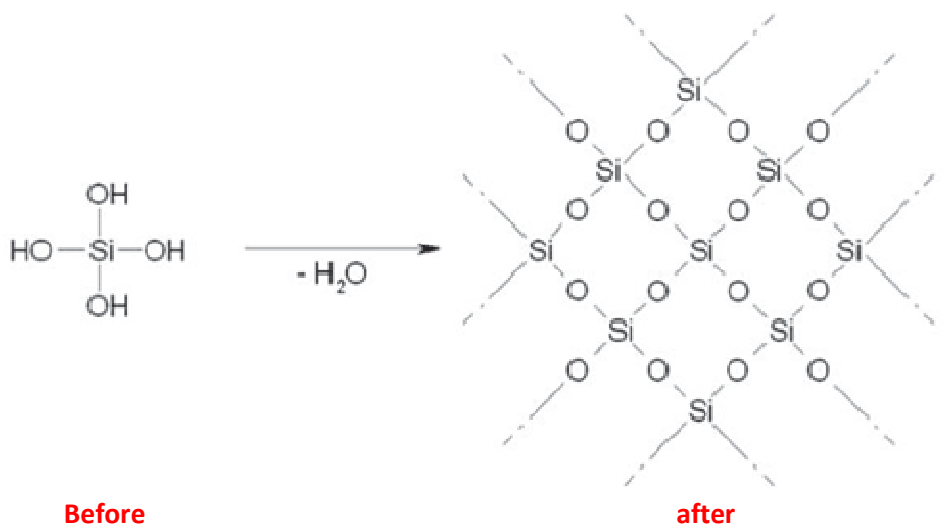
The chance to change

BrauSol Special is a high concentrated colloidal solution of a liquid silica sol. It provides for clarity and promotes filtration.

BrauSol Special reaction during the brewing process

When BrauSol Special added to the wort or beer and under suitable pH conditions, the SiO_2 molecules cross-link and transform into an insoluble hydrogel. Together with adsorbed haze-forming particles (12-60kDa) it flocculates and settles at the bottom of the tank. Settling down speed of the product is between 1,1-1,3m/day.

BrauSol Special is a high negative loaded liquid silica sol. The product reacts with the positive loaded proteins of the beer and as a final reaction; the silica sol will be restructured to a Hydro silica gel that it looks like a 3D-Net.



Characteristics:

- SiO_2 -content of about 40 %
- alkaline pH: 9,0-10
- surface area of about $220 \text{ m}^2/\text{g}$
- average particle size of 15 nanometres

Total dosing amounts will be between 20 – 160ml/hL in total production!



Application of BrauSol Special in the brewhouse

For optimal hot trub separation, BrauSol Special is added in the whirlpool. Dosing point is, when the whirlpool is full between 75-85%.

Visuell inspection: After the dosing in the hot wort, the wort will be for 20 sec. get white; this is the neutral reaction, when the liquid silica sol will be new formulated into a Hydrogel (see picture side 1)

Very important: No dosing before transfer-pump, otherwise the pump will destroy the coagulate between silica sol and proteins!

The coagulate will be settle down in the whirlpool bottom and will be separated together with the hot trub.

Dosage: 20-40 ml/hl wort.

- accelerates fermentation
- optimizes filter throughput in reduction of haze sensitive proteins
- strong hot trub precipitation
- very compact trub

Application of BrauSol Special in the fermentation or during transfer to storage cellar

During this process BrauSol Special is dosed into the cooled finished wort (preferred) or into the fermented beer using a special dosing unit (dosing pump like cleaning detergent dosing) or you put it in the hose (manually), or transfer it in the fermentation tank before cooled wort goes in (via keg).

Dosage: 20-40 ml/hl cooled wort.

- no impact on fermentation
- yeast crop is increased
- green beer clarifies quicker
- filter throughput during final filtration is increased

The dosage of BrauSol Special during transfer from fermenter to storage cellar provides good results particularly when used in final fermented beer, which is transferred with a temperature around the freezing point (0°C - 10°C).

Dosage: 20-40 ml/hl green beer.

The main portion of the chill haze forming particles is insoluble at low beer temperatures. Together with other filtration-inhibiting substances, they are eliminated from the beer in a rapid sedimentation process.

The brewmaster must take into account that settling time is around 1.1-1.3 m/day.





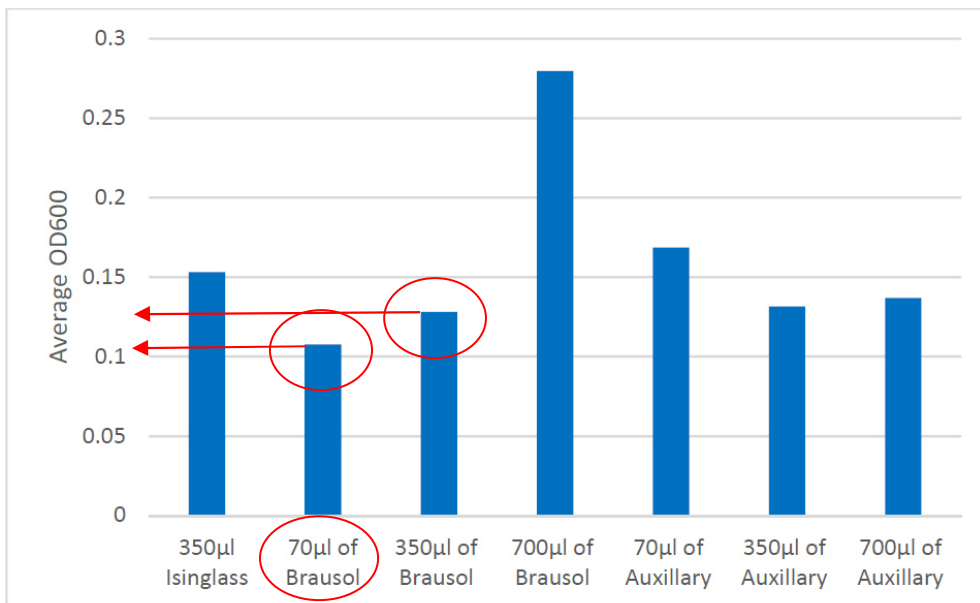
Special applications of BrauSol Special

With beers difficult to filtrate, for instance Weizen-, Kölsch- or Altbier (German top fermentation beers), an addition of 40 g/100 L BrauSol Special during fermentation leads to good results. Haze sensitive protein compounds resulting from the wheat malt are adsorbed and filterability is significantly improved. It is advisable to proceed in the same way with beers, which pose filtration problems due to variations in the malt raw material.

Special application of BrauSol Special for “cask or bottle conditioned” beer

When beers clarified with BrauSol Special in maturation, please pay attention that the BrauSol Special will not only remove the haze sensitive proteins, also the yeast content will decreased. That means in practise, to ensure for cask- and/or bottle conditioned beer a perfect second fermentation, you must add some fresh yeast that the process runs well.

Sedimentation trials in cask conditioned beer, made from Brewlab Ltd. UK, December 2017



Results:

The figures showing, that with the lowest dosing rate and with an equivalent-dosing rate of BrauSol Special, we received better sedimentation results, compared to the standard dosage of Isinglass in 24h.