



Kettle and Cellar Coagulant Optimization

A lab top method for determining the optimization dosage of BrauSol™ Special for the whirlpool and cellars

Why Optimize?

Proteins present in malt and hops can cause filtering issues as well as haze in packaged beers. The use of coagulants removes these proteins leading to increase filterability and shelf life. It is a characteristic of coagulants that they can be both over, and under, dosed. With both over and under dosing less proteins are removed. Over dosing has the additional negative of increasing costs by wasting coagulant. Coagulant optimization insures the least amount of coagulant is used for the greatest removal of protein at the most efficient cost.

What Should be Optimized?

We recommend every beer be optimized based on its original gravity, base malt, and use of adjuncts. For beers of a similar make-up one optimization is all that is needed. As any of the parameters change significantly a new optimization should be run. For example, if a brewery has a stout and pale ale of around the same gravities, and similar percentages of base malt and adjuncts, one optimization should be valid for both. If the base malt were to be different between the two, a new optimization should be run. Many breweries however, run an optimization for every beer produced.

How often should the Optimization Test be Run?

Whenever there is a significant change in the original gravity, base malt, or adjuncts a new optimization should be run. At a minimum a new test should be conducted with a change in grain crop year.

Optimizing BrauSol™ Special

This method is tailored to BrauSol™ Special which has a dosage rate of 20 – 100ml/hl (23 – 115 ml/bbl) of beer throughout the brewing process. When BrauSol™ Special is used in both the whirlpool and the cellars we recommend optimizing in the whirlpool first, then using optimized beer when testing for the optimized dosage in the cellars.

Equipment Needed

- 6 x 250 mL Graduated Cylinders
- 1 Stirring Rod
- 1 x 10 mL Graduated Pipette
- 1 x 5 mL Graduated Pipette
- 1000 mL Beaker
- 1/2 gallon Distilled or Reverse Osmosis Water (Deaerated if possible)
- 1/2 gallon Wort or Beer to be Optimized

Procedure

This procedure is designed for 250 ml of wort or beer using a 1% stock solution to dose the BrauSol™ Special.

- 1) First prepare a 1% stock solution of BrauSol™ Special. Place 990 mL of Distilled or RO Water into the beaker. Pipette 10 mL of well mixed BrauSol™ Special into the beaker. Stir to blend. Clean and dry the stirring rod and pipette if they are going to be reused.
- 2) Line up the 6 x 250 mL graduated cylinders. Going from one side to the other designate and mark the cylinders '20 mL/bbl', '40 mL/bbl', '60 mL/bbl', '80 mL/bbl', and '100 mL/bbl'. Keep the sixth cylinder as an untreated control.
- 3) Measure 250 mL of the wort or beer to be optimized into each graduated cylinder.
- 4) Using a clean pipette add 4.3 mL of the 1% stock solution of BrauSol™ Special into the cylinder marked '20 mL/bbl'; 8.5 mL into the cylinder marked '40 mL/bbl'; 12.8 mL into the cylinder marked '60 mL/Bbl'; 17.0 mL into the cylinder marked '80 mL/bbl'; and 21.3 mL into the cylinder marked '100 mL/bbl'.* Keep the last cylinder untreated as a control.
- 5) Use the stirring rod to mix, or gently invert each cylinder once or twice.
- 6) Let sit 24 hours.
- 7) Examine the cylinders. The cylinder with the maximum amount of coagulant** is the optimized dosage. This is the dosage to use in production.
- 8) Optional: Many breweries will fine tune the optimization by running the test again, but more precisely in the range determined from step #7 above. That is, if the result from step #7 showed optimization at 40 mL/Bbl, the test can be rerun for 30/35/40/45/50 mL/bbl to obtain a more exact optimization point.

Notes

*When using a volume of wort or beer other than 250 mL the amount of stock solution will need to be adjusted appropriately.

**The coagulant will likely appear light and fluffy in the graduated cylinder. In production, due to the increase head pressure or centrifugal forces, the coagulant will compact.