BIOFINE CLEAR APPLICATION AND LAB TRIAL DOCUMENT

MODE OF ACTION:

At the pH of beer, Biofine Clear speeds up beer clarification by accelerating sedimentation of yeast and other insoluble material into a compact layer at the bottom of the storage tank.

BENEFITS

1. Use of Biofine Clear substantially reduces settling time in storage.

2. Tank bottoms are better compacted giving sharp interface between clear beer and sediment, resulting in a better recovery of beer and lower beer losses than with other conventional treatment methods.

3. Tank bottoms recovered from Biofine Clear treated beer are more easily filtered to recover entrained beer.

4. Use of Biofine Clear results in significant increase in filter throughput with savings on diatomaceous earth, time and labour. The decrease in wash-downs and subsequent precoatings result in a lower risk of oxygen pick up.

5. Biofine Clear treated beer reduces the amount of diatomaceous earth containing effluent to be disposed of by the brewery.

6. Biofine Clear treatment improves head retention values particularly in beers produced from worts having higher than normal lipid levels.

7. Biofine Clear treatment results in a significant improvement in chill haze stability.

STANDARD METHOD OF APPLICATION:

1. Fining action is improved if product is chilled prior to fining ideally 0 – 10 °C.

2. Biofine Clear can be added immediately undiluted at a dose rate of 20 – 200 g/hectolitre of beer (200 – 2000 ppm) for individual plant trials.

3. The finings solution must be added to the beer tank in a manner which allows effective mixing with the beer.

4. When deciding on pumps etc for dosing it should be noted that the viscosity of the Biofine Clear solution will be highly similar to water.

5. To achieve maximum efficiency, the Biofine Clear solution should be dosed into the beer stream during transfer from the fermentation tank to the maturation tank. Metering into the rough beer stream at transfer has been demonstrated to produce highly satisfactory results.

6. For best results, the solution should be dosed over the entire transfer run.

7. The actual dosage rate should be determined in the laboratory as per the Biofine Clear Optimisation Method. This rate should be determined for each type of beer and whenever a significant change is made to the process such as changes in yeast strain, new malt crops or adjuncts.

DOSING IN 'UNITANK' SYSTEMS

1. For a Unitank operation, dosing should only take place once the primary fermentation is complete,

2. Vessel temperature should be reduced to <4 °C.

3. The bulk of the trub should be removed and over 90% of yeast should be already cropped for subsequent repitching.

4. Biofine Clear can then be added in the following way:

5. Add Biofine Clear using a suitable centrifugal pump or CO_2 sparging.

6. Add Biofine Clear via the CIP sprayball or sample cock.

7. The solution should be injected rapidly to ensure good mixing.

8. Additional mixing by vigorous CO_2 sparging for 5 - 10 minutes is recommended.

9. Take samples every 2 - 3 hours and check clarity or yeast cell count.

Do's & Don't's for BIOFINE CLEAR

Do store above 5°C	**Do not** allow to freeze
Do a laboratory optimisation for each beer type and when changes are made in process.	**Do not** use without first establishing dose rate in laboratory test.
Do ensure thorough mixing, which is achieved by dosing in line, post chiller over the entire transfer from FV to MV.	**Do not** expect the product to work if it is added to the beer in an uneven manner and roused after the final addition
Do monitor sediment volumes post finings on a regular basis to ensure optimal use.	**Do not** overdose as this can lead to unnecessary beer losses.

PROCEDURE FOR OPTIMISING Biofine Clear DOSE RATE IN LABORATORY

LAB OPTIMISATION:

- The optimum fining effect can be determined by trying a range of dose rates using the laboratory method of optimisation given below.

- To each of the 5 x 250ml graduated cylinders add the following quantities of Biofine CLEAR solution:

- These quantities serve as a guideline, intermediate quantities can be taken if required.

- Take 2 litres of beer from the line between the fermenter and primary storage tanks midway during rundown.

- To each of the 5 cylinders add 200 mls of the beer sample, shaking the beer while pouring to ensure uniformity of yeast in samples.

- 0.0 mls Biofine CLEAR giving a control + 200 ml of beer sample
- 0.05 mls Biofine CLEAR equivalent to 250 ppm + 200 ml of beer sample
- 0.1 mls Biofine CLEAR equivalent to 500 ppm + 200 ml of beer sample
- 0.2 mls Biofine CLEAR equivalent to 1000ppm + 200 ml of beer sample
- 0.4 mls Biofine CLEAR equivalent to 2000 ppm + 200 ml of beer sample

- Invert and shake cylinders to mix in the Biofine Clear. Stand overnight in the refrigerator, then compare the beer haze and compacted yeast on the bottom.

- Withdraw a sample of beer and measure haze on haze meter.

- Determine the optimum dose level based on the haze in the beer.

Biofine Clear optimisation