

Beer clarification using Isinglass

Tharshini Vinayahan¹, P. A. Williams¹, J. Littlewood², B. Jordan²

(1) *Glyndwr University Wrexham, LL11 2AW, UK,*

(2) *Lallemand Plc, Burton upon Trent, UK*

Isinglass is derived from swim bladders of certain tropical fish and sub-tropical fish. Isinglass is used extensively in brewing to remove haze and improve filterability of beers. The primary causes of haze in beer are residual protein and suspended yeast cells left at the end of the fermentation process.

Proline rich proteins in beverages bind with polyphenols non-covalently to produce haze active particles. The size of the haze active particles is influenced by the ratio of haze active protein to polyphenol as well as the pH and alcohol content of the beer. The largest component of isinglass is collagen, which carries a net positive charge when it is dispersed in beer. The side chains attract the negatively charged yeast cells and the whole complex precipitates and can be removed from the beer. According to Stokes law, the larger the particle the greater the rate of sedimentation, so when isinglass/yeast complexes bind with negatively charged auxiliary fining/protein complexes and other collagen molecules the rate of sedimentation increases.

Different batches of isinglass samples were taken and analysed with beer for clarification using Haze meter. In addition net charge of the system, pH of the system, particle size and molecular weight of the samples were analysed and correlated with the clarification process using Zeta-sizer nano and Gel permeation chromatography and SDS PAGE.