

Tony Cooke

Selection and Performance of Flocculents for Hatschek made Air Cured Fibre Cement

Name of authors

A M Cooke¹, S A S Akers² and R Winter³

Keywords:

Abstract.

The manufacture of fibre cement by the Hatschek process involves the filtration of dilute slurries of finely divided particles on a screen with relatively large openings. The large quantities of water passing these screens contain significant amounts of very fine chemically active solids (particularly cement and fine silica) that must be promptly recovered and reused. Prompt recovery of these solids in the water clarification and solids recovery system associated with the Hatschek system requires the use of chemical flocculents which agglomerate these fine solids into hydraulically coarser particles that settle rapidly to a position from which they are returned to the feed of the machine.

Effective flocculents for cement based materials are anionic in nature and their chemistry is surprisingly similar to effective dispersants and super-plasticisers used in concrete. This paper discusses the chemistry and the properties required of suitable flocculents contrasting these with those required of super-plasticisers. Critical factors within the Hatschek machine itself including the delivery system for slurry to the Hatschek machine vats and delivery of flocculent to the system are also discussed and recommendations are made.

The results disclosed here were obtained during the optimisation of the operation of a recently commissioned 4-vat Hatschek machine installed. Several flocculents were evaluated before and after changes were made to the feed system with varied molecular weights and charge densities.

Several practical methods for the selection of flocculents were evaluated but it was found that these did not reliably predict their performance and that the best method of evaluation was through limited trials on the Hatschek machine itself.

¹ AC Cubed Consultants Gunning Australia, to whom questions and queries should be addressed , email: tonycookeinoz@gmail.com

² AC Cubed Consultants, Mollis Switzerland

³ Everite Building Products, Kliprivier, Gauteng, South Africa