



INTERNATIONAL Convention on Colorants - 2007



Session 1: Paper 4

ABSTRACT

BIO-AUXILIARIES IN THE FIELD OF COLOURANTS

Edward Menezes, *Rossari Biotech Pvt Ltd.*

A large amount of chemicals and dyestuffs are used for textile processing and other industrial applications, that are consequently exploiting our environment as well as posing an adverse effect on living beings. The present scenario is to use environment friendly processes quickly, reliably and on a global scale, which are the key challenges for the industry.

During manufacturing as well as after application in textile processing, almost all the chemicals along with dyes are discharged into effluents constituting a major portion of water pollution. The major polluting substances are heavy metals, various processing auxiliaries, dyestuffs. Colour is another visible objectionable parameter of effluent from textile industry.

Modern society expects bio-auxiliaries to be the answer for many worldwide problems like depletion of energy sources, incurable illnesses and pollution, amongst other problems. Industrial use of biotechnology, known as white biotechnology, is bringing about new products and processes aimed at the use of renewable resources, as well as the application of green technologies with low energy consumption and environmentally healthy practices. Textile processing is a growing industry that traditionally has used a lot of water, energy and harsh chemicals - starting from pesticides for cotton-growing to high amounts of wash waters that result in waste streams causing high environmental burden.

As textile fibers are polymers, the majority being of natural origin, it is reasonable to expect there would be a lot of opportunities for the application of bio-auxiliaries to textile processing. Enzymes - nature's catalysts and bio-auxiliaries are the logical tools for the development of new biotechnology-based solutions for textile wet processing. Applications of enzymes in textile wet processing open up new horizons towards environmental friendly technology. This is because the enzymes are biodegradable, work under mild conditions and save precious energy. Normally bio-auxiliaries are biodegradable, thereby eliminating chances of increasing the pollution load, are more user friendly for human body contact, better from a medical and hygienic point of view, reduce effluent generation so effluent treatment costs becomes lesser keeping pollution free discharge to environment. Bio-auxiliaries can be used in new production processes that are themselves less polluting than traditional processes. Bio-auxiliaries can be used for colour removal from effluents. Azo reductase acts on colour chromophores and pigments resulting in the discoloration of Azo dyes effluent. Laccase are also used for effluent colour removal. Peroxidase ostreatus acts on colour chromophores and pigments resulting in the discoloration of Remazol of basic dye effluent. Xylanases and other hemi-cellulolytic enzymes which are obtained from select fungal cultures catalyze resulting in hydrolysis of natural complex Polysaccharides, Xylans, Glucans from the surface of the waste paper, releasing entrapped printing ink from the pulp, thus accelerating the de-inking of the pulp rendering superior brightness.

Edward Menezes is a B.Sc. (Tech.) in Textile Chemistry, and has an experience of over 22 years in the field of textile chemical processing. He has served in various capacities, ranging from technical services at DCProcessors and Jaysynth Dyechem to Business Development Manager at Sandoz (later Clariant). He was responsible for the co-ordination and control of all activities related to the Masterbatch Project at Clariant. He also played a key role in the R&D activities and in technology transfer from overseas. He briefly held the post of Director at Britacel, where he developed certain overseas markets before forming his own venture, Rossari Biotech Pvt Ltd., where he continues to operate as the Technical Director, responsible for production, purchasing, technical Services, technical promotion and new product development. He is a widely travelled person with numerous overseas assignments for technical services and business promotional activities.

