

INDUSTRIAL BIOPROCESSING ALERT

BIO-PASTE--A NATURAL FORMULA FOR TEXTILE PRINTING

Synthetic thickening agents are a common component of inks used in textile printing, which usually consist of high-molecular weight polymers. When these waste inks are disposed into the environment, the high-molecular weight polymers contribute toward the water pollution of surrounding waterways.

To combat this problem, researchers from the Faculty of Applied and Creative Arts from Universiti Malaysia Sarawak (UNIMAS) have created a formulation based on sago (sago refers to a starch made from the pith of the sago palm, a crop that is cultivated in the state of Sarawak in Malaysia), which can be used as a bio-based thickening agent for printing fabrics. As such, natural biodegradable materials were developed from sago starch as an alternative to synthetic pastes.

The research mainly explores instances where printing producers and artists can use starch as a thickening agent or paste in textile printing. UNIMAS's sago starch-based thickening agent, known as Bio-Paste, is an advanced formula consisting of a powdery paste compared to existing printing inks that is in liquid form. The paste is easily diluted with water to get a starchy type of printing paste. The powdery BioPaste formula can be reused many times either in cool or warm mode by just adding cool or warm water.

According to the researchers, the advantages of using Bio-Paste are that the fumes are nontoxic and the paste itself is easy to dispose, compared to synthetic paste. The powder formulation is also cleaner and more convenient to pack and store. Furthermore, the paste has been proven to work well with natural materials such as silk, cotton, crepe de chine, and habotai silk. In comparison, synthetic printing paste only covers the top surface of these fabrics. The application of the Bio-Paste is also suitable for the silkscreen printing technique, and can either be used in the delicate hand silkscreen process, or sped up using a mechanized semi- or full automatic carriage printer.

Overall, the main advantage posed by the Bio-Paste product is its nontoxicity and environment friendliness. The fact that it can be reused multiple time indicates a reduction in the amount of printing paste required, and subsequently a reduction in the amount of printing waste generated during the printing processes.

At the moment, the researchers are at a stage of finalizing the stability of the formula in big bulk form. As the research has only been carried out at the laboratory scale with small amounts of powdery paste produced, the researchers are currently attempting to procure equipment capable of producing the powdery formulation in big bulk form. The research team is also keen to collaborate with industrial textile manufacturers regarding the commercialization of the product. A patent protecting the technology is in the process of being filed.

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