ENZYMATIC TECHNOLOGY FOR STARCH TREATMENT

David Gracià[1*], Albert Beltran[2]

[1] Sertec20, Carrer de la Masia en Notari, 21 , 08800 Vilanova i la Geltrú (Barcelona), Spain;
david.gracia@sertec20.com, mobile +34 678 614 372, phone +34 936 379 425, fax +34 936 375 727
[2] Sertec20, Carrer de la Masia en Notari, 21 , 08800 Vilanova i la Geltrú (Barcelona), Spain

ABSTRACT

Being a natural biodegradable product, starch is considered environmentally friendly compared to synthetic chemicals. Since starch is an abundant, renewable product, it offers economic value to papermakers unparalleled by other chemicals. It still offers the best value when it comes to paper strength.

Paper recycling is one of the most important types of recycling that exists. Actually, when people talk about recycling paper, they are referring to cellulose. That is to say, to the main material that makes up the paper and that is extracted from the wood of the trees. However, for this cellulose to be able to berecycled, it must be in acceptable conditions. This means that if it is paper or cardboard that has undergone certain chemical treatments the paper in question is unusable for recycling.

Generally, recycled papers contain starch and it can be present in three ways: 1) Cationic starch which is widely used in mass to enhance sheet strength and stiffness, due to the ionic interactions between the starch, fibres and fillers are stronger than simple hydrogen bonds. 2) Native starch used between layers in spray to increase plybond or in superficial applications such as size press or film press to improve superficial properties. 3) Native starch used in box plants to produce corrugated inner layers and to glue all paper layers.

In most cases, the starch present in recycled paper is so degraded that its recovery does not provides anybenefit to papermaking and its presence in the circuit contributes to significantly increase COD in WWTP and microbicides agents. SERTEC20 has developed BIOTEC SR, a concentrated preparation developed to facilitate the removal of starch used in paper production by hydrolysis of the alphaglycsidic bonds of high molecular weight polysaccharides, such as starch, releasing low molecular weight carbohydrates easier to treat in WWTP by microorganisms.

Additionally, SERTEC20 has also developed BIOCLEAN LDA, a cleaning agent specifically developedfor the removal of starch residues deposited in the circuit and that cause problems related to microbial growth and material detachment, which can ultimately cause problems during production, slimeformation and generation of bad smells. It is an environmentally friendly formulation compared to traditional chemical products used to clean organic deposits, typically alkaline, which does not require acid neutralization after use. The formulation incorporates biodispersant agents to facilitate the removal and solubilization of deposits. It can be used diluted in water or in foam to clean external parts and ceiling of tanks.

The most precious asset on the planet, origin of life and source of existence of all living beings, is also a scarce resource that must be used responsibly. One of the most important aspects, therefore, is the reuse of water to improve the Water Footprint, an indicator that allows us to know the amount of water that a person, community or a country uses in their day to day.

Keywords: COD reduction, environmentally friendly, enzyme, starch, water footprint.