

Answer on Question #40916 - Chemistry - Other

Question:

1. What type of starch is suitable for production of Bio-plastics?
2. Can you suggest some articles and books to understand well about production of Bio-plastics and design of plant?

Solution:

1. Starch based plastics are mainly harvested from wheat, potatoes, rice and corn. Of these four starches, corn is the most commonly used and is the least expensive starch. The bioplastics found in the market are made mainly from starch. Starch-based bioplastics represent from 85% to 90% of market's bioplastics. Among starch bioplastics are those manufactured with native or slightly modified starches, either isolated or blended with natural or synthetic molecules. In addition, there is also the result from the lactic acid polymerization obtained through the fermentation of starch. Thermoplastic starch has been shown to demonstrate good oxygen-barrier properties, but the hydroscopic nature of starch dictates this material is unsuitable for high-moisture and liquid food products.
2. There are some papers in the archive, where you can find useful information about production of Bio-plastics. I can also advice you some books:
 - 1) "Bioplastics – Basics. Applications, markets." by Dr.-Ing. Michael Thielen
 - 2) "Bioplastic" by Frederic P. Miller, Agnes F. Vandome, John McBrewster
 - 3) "Bioplastic Production in Plastic Age: Alcaligenes Eutrophus the Bioplastic Maker" by Dr. Sherif El-Kadi