

MSU Product Center

For Agriculture and Natural Resources

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Starch-based biopolymers

Product description

- Starch is a natural polymer which occurs as granule in plant tissues. Starch-based polymers can be obtained from corn, potatoes, wheat, and similar sources.
- Polysaccharide polymers include starch-, cellulose-, and chitin-based polymers and natural fibers. Currently most of the polysaccharides represent modified natural polymers.

Applications, general market trends and information

- Starch-based polymers have industrial uses in foods, adhesives, textiles, paper, pharmaceuticals, films, and packaging. About 75% of starch-based polymers are being used in packaging applications.
- These polymers dominate the bio-based polymer market.
- In 2005, the market for biodegradable plastics in North America has been estimated at 60 million pounds – up from 25 million pounds in 2000. Starch-based polymers were expected to account for 30 million pounds.
- Leading producers of starch-based polymers include Novamont (Italy), National Starch, Biotec (Germany), and Rodenburg (Netherlands).

Technology, Manufacturing and Value-Chain Issues

- Application and utilization of starch-based polymers for biodegradable plastic products has been hampered by water sensitivity, manufacturing cost, poor interaction with other ingredients, and the need for non-traditional processing equipment and processes.
- In addition to technological advances to create more compatible products with high performances blending starch and other polymers, future growth in starch-based polymer products will depend on the developments and changes in equipment design and feed systems.

Overall product development opportunities

- Current market for starch-based polymer products appears to be limited. Future market growth for these polymers will depend on the development of new techniques to produce, process and blend/mix these polymers, appropriate manufacturing equipment, cost structure, performance related to the competitive products, and the development of new application areas.

Sources

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