A biodegradable plastic produced using a lignin derivative and alkylating and/or acylating agents has been developed by University of Minnesota researchers. This invention allows the value-added use of lignin that is otherwise a by-product of paper making, cellulosic bioethanol generation, and chemicals and pharmaceuticals production from plant material. It also provides a renewable and domestic alternative to petroleum as a raw material for the production of thermoplastics.

Certain alkylated kraft lignin fractions yield polymeric materials with mechanical properties very similar to polystyrene. These materials also can be plasticized by commercially available aliphatic polyesters. Similarly, acylated kraft lignin fractions can be plasticized by polyethylene glycol derivatives.

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**Features & Benefits**

- Biodegradable thermoplastic from lignin
- Utilizes alkylating and/or acylating agents
- Value-added use to excess lignin from paper making, bioethanol generation, or chemical and pharmaceutical production from plant material

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**Technology Status**

Technology has been demonstrated in laboratory.

**IP Status**

U.S. Patent 6,172,204

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