Poly(Butylene Succinate)

Subjects: Polymer Science

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Poly(butylene succinate) is an aliphatic polyester obtained by polycondensing succinic acid with 1,4-butanediol, and it is one of the few biodegradable polyesters that can be melt-processed on conventional equipment. Its melting point is close to that of low-density polyethylene, and its mechanical behaviour is comparable, which makes it a candidate replacement for packaging film [1]. The monomers can be produced by fermentation, so the whole chain can in principle be biobased rather than only biodegradable [2]. The crystallisation rate is slow, and nucleating agents or copolymerisation with adipate units are applied to raise the crystallinity and the processing speed [3]. The modulus is lower than that of poly(lactic acid), and blending the two is a common way to balance stiffness against toughness [4]. Hydrolysis under ambient conditions is slow, so industrial composting rather than a marine or soil environment is the realistic end-of-life route [5].

aliphatic polyester | succinic acid | 1,4-butanediol | melt processing | crystallisation rate | composting | biobased monomer

References

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