Cite this article
(2024)
Award-winning paper in 2022.
Green Materials **12(1)**: 46,
https://doi.org/10.1680/jgrma.2024.12.1.46

Announcement

Green Materials

Award-winning paper in 2022

Papers published in *Green Materials* are eligible for awards from the Institution of Civil Engineers. Papers from any of the ICE journals can be nominated for several awards. In addition, each journal has awards dedicated to their specific subject area.

On Friday 13 October 2023, ICE president Keith Howells presented an award to the following paper published in *Green Materials* in 2022. The editorial panel nominated their best papers and an awards committee chaired by Tim Broyd allocated the awards.

Green Materials Prize

The Green Materials Prize was awarded to Chu *et al*. (2022).

Abstract

This study reports the synthesis of a kind of biomass-based plasticizer: epoxy eleostearic acid catechol ester (EEAE), originating from biomass resources eleostearic acid and catechol by way of esterification and epoxidation. Its effect on the plasticization, mechanical properties and migration resistance of poly(vinyl chloride) (PVC) film was investigated. The results showed that epoxy groups were covalently bonded on the branched chains of EEAE and the epoxy groups and ester groups of EEAE formed hydrogen bonds with the α-hydrogen of PVC, which had a better plasticizing effect on PVC than commercial diisobutyl phthalate. When the mass of EEAE increased from 0.2 to 0.8 g in PVC films, the glass transition temperature (T_g) decreased from 86.7 to 54°C and the elongation at break of the PVC films increased from 124.24 ± 6.00 to 321.12 ± 6.13%, while the tensile strength decreased from 40.12 ± 1.23 MPa to 19.67 ± 2.33 MPa, which illustrated that EEAE had an efficient plasticizing effect on PVC. The plasticizer showed marginal resistance to volatilization and solvent extraction. The thermal stability and compatibility of PVC films plasticized with EEAE were also improved.

REFERENCE

Chu H, Li H, Sun X and Zhang Y (2022) Synthesis and application of eleostearic acid based plasticizer. *Green Materials* **10(4)**: 146–153, https://doi.org/10.1680/jgrma.21.00007.