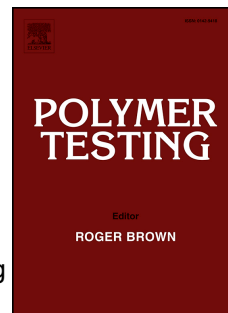


# Accepted Manuscript

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PII: S0142-9418(18)30440-9

DOI: [10.1016/j.polymertesting.2018.05.039](https://doi.org/10.1016/j.polymertesting.2018.05.039)

Reference: POTE 5486

To appear in: *Polymer Testing*

Received Date: 18 March 2018

Revised Date: 3 May 2018

Accepted Date: 25 May 2018

Please cite this article as: M. Jiang, Y. Liu, C. Cheng, J. Zhou, B. Liu, M. Yu, H. Zhang, Enhanced mechanical and thermal properties of monocomponent high performance epoxy resin by blending with hydroxyl terminated polyethersulfone, *Polymer Testing* (2018), doi: 10.1016/j.polymertesting.2018.05.039.

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## Enhanced mechanical and thermal properties of monocomponent high performance epoxy resin by blending with hydroxyl terminated polyethersulfone

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### Abstract

In this paper, hydroxyl terminated polyethersulfone(PES) was used as a toughening agent to modify the monocomponent high performance epoxy resin by blending. The solubility of PES in epoxy resin and the curing performance, mechanical properties, morphology, viscoelastic properties and thermal properties of epoxy/PES blends were investigated, respectively. The dissolution experiment results showed that the hydroxyl terminated PES had a good compatibility with the epoxy resin and could be dissolved in epoxy resin under controlled conditions. FT-IR studies showed that the addition of PES did not affect the result of epoxy resin curing reaction. The results of the mechanical properties of the epoxy/PES blends indicated a 32% and 9% enhancement in fracture toughness and impact strength respectively, which can be ascribed to the bicontinuous phase structure of the epoxy/PES blends. Reaction induced phase separation was observed in the epoxy/PES blends during the curing process of epoxy resin, which presented dispersed particles, bicontinuous and phase inverted structures with the increase of the PES content. Thermogravimetric analysis revealed that the thermal stability of the epoxy/PES blends were slightly increased compared to that of the pure epoxy resin. Thus, the hydroxyl terminated

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