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# Investigation of poly (glycidyl methacrylate-*co*-styrene) as a curing agent for soy-based wood adhesives

Seyyed Yahya Mousavi, Jian Huang and Kaichang Li\*

Department of Wood Science and Engineering, Oregon State University, Corvallis, OR 97331, USA

\*Corresponding author.

*Email address:* kaichang.li@oregonstate.edu

**ABSTRACT:** In this study, poly (glycidyl methacrylate-*co*-styrene) (PGS) emulsions were synthesized through a free radical initiated emulsion polymerization of glycidyl methacrylate (GMA) and styrene. The PGS was characterized with FTIR, and investigated as a curing agent for soybean flour (SF)-based wood adhesives. Seven-ply plywood panels were prepared with the SF-PGS adhesives and were evaluated for their water resistance through a three-cycle water-soaking test. Effects of the PGS/SF weight ratios, hot press temperature, hot press time, and usage of NaOH on the water resistance of the resulting plywood panels were investigated. Decrease in the relative amount of GMA in the PGS reduced the effectiveness of the PGS as a curing agent in the SF-PGS adhesives. Plywood panels made with the SF-PGS adhesives met the industrial requirement for interior plywood.

*Keywords:* glycidyl methacrylate; interior plywood; soy-based adhesive; styrene; water resistance.

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