

3rd International Conference and Exhibition on

Biopolymers & Bioplastics

September 12-14, 2016 San Antonio, USA

Study on the curing characteristics and synthesis process of modified urea-formaldehyde resin with low formaldehyde release

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The modified urea-formaldehyde resin with low formaldehyde release was synthesized with different kinds of additives in this paper. And the curing characteristics were studied mostly. The results indicated that: the urea-formaldehyde resin with additive 1+2+3 showed the fastest cure rate, which improved about 15% compared with the blank sample, but the mechanical properties was poor. So the synthesis process was optimized based on the addition of assistant 1+2+3, the results showed that:①melamine has a very significant effect on reducing free formaldehyde, when the added amount reached 3%, the formaldehyde release was only 0.28mg/L;②increased the viscosity of the resin can improve the bonding strength of the adhesive obviously.

Biography

Jiyou Gu is a Professor and the Dean in the College of Material Science and Engineering at Northeast Forestry University. He obtained his BSc degree in 1982 and his MSc degree in 1988 from Northeast Forestry University, and received his PhD degree from Kyushu University in Japan in 1996. He has been a Visiting Professor at the University of Tokyo in Japan and in Finland. His research interests cover the adhesives used on wood and the manufacture of plywood, fiberboard, and other wood products. He is particularly interested in design and synthesis of adhesives, improving the properties of adhesives, manufacture of adhesives, and optimization of adhesives functions.

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