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WATERBORNE POLYURETHANE
DISPERSIONS

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www.elsevier.com/locate/ijadhadh

PII: S0143-7496(18)30153-2
DOI: <https://doi.org/10.1016/j.ijadhadh.2018.06.002>
Reference: JAAD2218

To appear in: *International Journal of Adhesion and Adhesives*

Received date: 7 December 2017

Accepted date: 2 June 2018

Cite this article as: Mónica Fuensanta, José Antonio Jofre-Reche, Francisco Rodríguez-Llansola, Víctor Costa and José Miguel Martín-Martínez, STRUCTURE AND ADHESION PROPERTIES BEFORE AND AFTER HYDROLYTIC AGEING OF POLYURETHANE UREA ADHESIVES MADE WITH MIXTURES OF WATERBORNE POLYURETHANE DISPERSIONS, *International Journal of Adhesion and Adhesives*, <https://doi.org/10.1016/j.ijadhadh.2018.06.002>

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STRUCTURE AND ADHESION PROPERTIES BEFORE AND AFTER HYDROLYTIC AGEING OF POLYURETHANE UREA ADHESIVES MADE WITH MIXTURES OF WATERBORNE POLYURETHANE DISPERSIONS

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ABSTRACT

Several waterborne polyurethane urea dispersions (WPUUs) were prepared by mixing different amounts of two waterborne polyurethane urea dispersions made with polyester (WPUU-Polyester) and polycarbonate diol (WPUU-PCD). Their crystallinity, thermal, rheological, viscoelastic and adhesion properties depended on the segmented structure and degree of phase separation which were determined by the different content of the parent dispersions. The PUU films made with WPUU-Polyester+WPUU-PCD mixtures containing more than 50 wt% of WPUU-PCD showed higher hard segments content and lower degree of phase separation, and the addition of 25 wt% of WPUU-Polyester imparted crystallinity to the polyurethane urea due to the interactions between the carbonate groups in the soft segments. The differences in the degree of phase separation and crystallinity of the PUU films made with WPUU-Polyester+WPUU-PCD mixtures were evidenced by the increase in the glass transition temperature associated to the alpha relaxation of the soft segments, and the higher modulus at the cross-over between the storage and loss moduli. Excellent adhesion

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