

Abstract (600 word limits)

Title of the Abstract: Influence of aluminasilicates on the crosslinking of phenolic resins

Author Name: Beata Strzemieska, Adam Voelkel, Jacek Rózański

Affiliation: Faculty of Chemical Technology, Institute of Chemical Technology and Engineering

University: Poznan University of Technology

Country: Poland

Phenolic resins are used mainly as a binder for abrasive articles, plywood. They possess very high thermal and chemical resistance. The efficiency of the bounded abrasive tools depend essentially on the crosslinking of phenolic resin. It was shown that some kind of zeolites can accelerate the crosslinking reaction of the phenolic resins [1]. It was shown that acidic form of zeolite can accelerate effectively hardening (crosslinking) of phenolic resins. Nowadays, hardening of phenolic resins in abrasive products is carried out for 28 h at 180°C and hexamine is used as hardener that causes emission harmful compounds such as: ammonia, formaldehyde. Thus, partial (or complete) replacement of hexamine by catalytically active filler bring tangible benefits such as: lowering the temperature of the crosslinking, shortening the time of the hardening process, the reduction (or elimination) of hardener amount and thereby reduction of emitted harmful compounds, the possibility of improvement of the thermo-mechanical properties of the final composite. An important advantage of the using the modified aluminosilicates as filler for production of abrasives is the fact that the filler is a component always added to the composition used for the manufacture of abrasive tools [2]. Rheology was used for testing crosslinking process of the phenolic resins in the presence of the different aluminosilicates. The rheological studies indicated that the tested aluminosilicates influence significantly on the hardening process of phenolic resins: the change of melting point, gel point and kinetic of crosslinking process.

Biography (200 word limit)

Doctor Beata Strzemieska is an assistant professor on the Faculty of Chemical Technology, Institute of Chemical Technology and Engineering, Poznan University of Technology. She obtained Ph.D. in 2006. In 2015 she obtained the scientific degree of habilitated doctor. She is the author of over 40 publications, four chapters in the books, several presentation on national and international conferences in which she presented studies of polymer composites, solids surface, polymers. In her papers she stresses practical applications of the different instrumental techniques for studying polymer composites. The recent studies of dr. Strzemieska concern synthesis of the new materials for polymer composites.

This work was supported by the National Science Centre Poland under research project No. UMO-2015/17/B/ST8/02388.

References

1. B. Strzemieska, A. Voelkel, M. Hinz, M. Rogozik, [Application of Inverse Gas Chromatography in Physicochemical Characterization of Phenolic Resins Adhesives](#), *J. Chromatogr. A*, 1368 (2014) 199-203.
2. B. Strzemieska, K. Héberger, A. Voelkel, [Similarity and Grouping of Perlite and Zeolite Abrasive Fillers: A Replacement Test](#), *J. Appl. Polym. Sci.*, 127 (2013) 3839-3847
3. [systematize of the obtaining methods of polymer compositions, research on the content and properties of biologically active polymer compositions](#)

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