



Antistatic Effect of Lignin; As a Cost-Effective Additive

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ABSTRACT

Lignin is a complex 3D organic polymer, consist of hydroxyl, methoxyl, carbonyl and carboxyl substitutions without an exactly known chemical structure. Occurring in higher plants, mainly in woody tissues of hardwood and softwood plants, lignin is the world's second most abundant polymer which provides unique strength and elastic properties of the plants. Predominantly, lignin is obtained as a byproduct during the pulp production of the paper industry and millions of tons of lignin per year are mostly burned simply for energy. Such an abundant polymer also has some very useful features such as having antioxidant properties, being amorphous and behaving like thermoplastics. Thus, it is convenient to be used as a source of low molecular weight chemicals, dispersants, emulsifiers, and additives for polymeric materials.

Since many industries such as polymer, electronics, space, medicine and etc. are dealing with troubles caused by static electric deposition; it is aimed, in this study, to provide a cheap and environment friendly method for avoiding electrostatic charge formation using lignin as an antistatic agent for elastomers. Elastomers doped with isolated natural lignin are characterized by various techniques and then, lignin doped samples are analyzed for surface charge density measurements (net charge and discharge time measurements) to assess the extent of antistatic behavior and the results are compared with the undoped samples.

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