

Application of modified cashew nut shell liquid as curing agent in natural rubber vulcanization

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Abstract:

Cashew nut shell liquid (CNSL) is a by-product from the cashew industry. The CNSL is a renewable natural material and has as its advantages cheap price, abundant availability, and biodegradability. The natural raw CNSL mainly composes of phenolic compounds with different alkenyl side chains. Its unique structural features cause CNSL is considered as a primary material in the synthesis of many polymers. Moreover, some researchers have applied CNSL as an additive in rubber and polymer formulations to promote thermal stability, to plasticize, and as antioxidant. However, there is an absence of literature on effects of CNSL and its derivatives on accelerators and/or curing characteristics. But, the main components in CNSL affect rubber properties in both positive and negative ways. The acidic

chemicals could retard crosslinking in rubber vulcanization by absorbing accelerators. On the other hand, the phenol component can boost oxidation resistance. Isolating the components of CNSL is not a cost effective option, and it would also involve organic solvents that are not environmentally friendly. Therefore, the use of CNSL in rubber needs to balance between the various effects. In the present study, the effect of modified CNSL on properties of NR compounds and NR vulcanizates was investigated in comparison with raw CNSL. The properties in terms of curing characteristic, crosslink density, physical properties, and thermal stability, were characterized and are discussed.

Biography:

Anoma Thitithammawong has completed her PhD at the age of 27 years from Prince of Songkla University (PSU). After finished her Ph.D., she continues her work with PSU as a lecturer who teaches about rubber technology and polymer science. She also shares her

knowledge as a consultant in many rubber products companies. She has published more than 22 papers in reputed-international journals.