

Waste Cooking Palm Oil as Sustainable Material for Polysulfide Synthesis: Characterization as a Crosslinker for Inverse Vulcanization

*Abdullah Nayeema, Jun Haslinda Shariffuddin^{a,b,c} and Mohd Faizal Alic**

^aCollege of Engineering, Universiti Malaysia Pahang, 26300 Gambang, Pahang, Malaysia

^bCenter for Sustainability of Ecosystem & Earth Resources, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang Darul Makmur, Malaysia

^cFaculty of Chemical & Process Engineering Technology, Universiti Malaysia Pahang, 26300 Gambang, Pahang, Malaysia

*Corresponding author: mohdfaizalali@ump.edu.my

Abstract

Edible oils are becoming popular as crosslinkers to produce inverse vulcanized polysulfides. Waste palm cooking oil can be a suitable alternative as it is inexpensive and abundant in Malaysia. In the current work, the physicochemical properties were studied to analyze the potential of using waste palm cooking oil as a crosslinker. FTIR and GC-MS were done for molecular study, functional group analysis, and percentage of constituents. Data interpretation and comparison between fresh and waste palm cooking oil shows no significant structural and spectroscopic change. TGA was done to study the thermal stability and decomposition of both fresh and waste cooking oil. It is concluded that waste palm cooking oil can be a potential feedstock for inverse vulcanized polysulfides based on the experimental results.

Keywords: Waste palm cooking oil; Characterization; Crosslinker; Polysulfide; Inverse vulcanization.