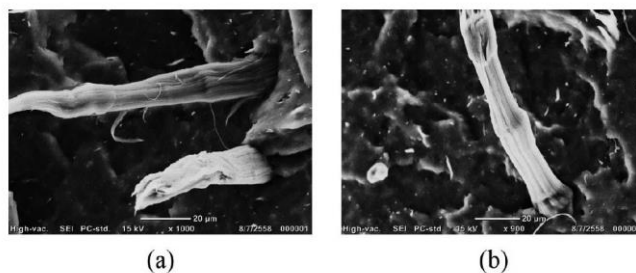


Reinforcement of SBR with Carbon Black and Aramid Pulp Hybrid Filler: Comparison between Pre-Dispersed and Conventional Aramid Pulp

Apart from carbon black (CB) and silica, the most commonly used particulate fillers in the rubber industry, many attempts have also been made to use short fiber as a reinforcing filler in rubber products because of its high aspect ratio and thus superiority in reinforcing efficiency. Aramid fiber possesses relatively high strength and thermal and chemical resistance. To gain the maximal reinforcement from aramid fiber, good fiber dispersion and a strong rubber–fiber interaction must be attained. In this work, SBR compounds reinforced with a hybrid filler of carbon black (CB) and aramid pulp were prepared. The ratio of CB to aramid pulp was varied and its effects on viscoelastic and mechanical properties of the rubber were investigated. Two aramid pulp types were used in this study: conventional aramid pulp (CAP) and the pre-dispersed aramid pulp (PAP). The results demonstrate the undesirable decrease in rubber-filler interaction with increasing aramid pulp loading, regardless of the aramid pulp type. The pre-dispersed aramid fiber gives an improvement in the dispersion of the fiber in SBR.

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SEM images demonstrating SBR filled with 6 phr of aramid pulp: (a) CAP and (b) PAP

Reference:

M. Nillawong, P. Sae-oui, K. Suchiva, **C. Sirisinha**, Properties of Styrene Butadiene Rubber Filled with Carbon Black and Aramid Pulp Hybrid Filler: Comparison between Pre-dispersed Aramid Pulp and Conventional Aramid Pulp, *Rubber Chemistry and Technology*, 89 (4), 640-652, 2016.