

TITLE PROPERTIES OF SBR FILLED WITH CARBON BLACK AND ARAMID PULP HYBRID FILLER: COMPARISON BETWEEN PREDISPERED ARAMID PULP AND CONVENTIIONAL ARAMID PULP

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ABSTRACT Compounds of SBR incorporated with 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 predispersed aramid pulp (PAP). The rubber-filler interaction as indicated by bound rubber content decreases with increasing aramid pulp loading, regardless of the aramid pulp type. This results in a decrease in tensile and abrasion properties with increasing fiber loading. The energy dissipation properties of the hybrid composites are also poorer than those of the CB/SBR composite, as reflected by the heat buildup values. Use of predispersed aramid fiber resulted in improved dispersion of the fiber in SBR. Thus, Mooney viscosities of the PAP-filled systems are lower than those of the CAP-filled systems, but the percentages of elongation at breaks are higher. The distinct feature of aramid fiber/CB hybridSBR composites is their high moduli over an extended range of temperatures up to 80°C that is unattainable with the use of CB alone.