effeet of some ingredients on the electrical brobertios of carbon bladed rubber blends

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Two rubber blends of polychloroprene rubber CCRD and butadiene—acrylonitrile rubber CNBR) as well as natural rubber CNR) and CNBR) have been prepared according to the standard methods.The effect of adding Zinc oxide on the electrical conductivity of these blends has been studied.The concentration of 7.5 phr of ZnO results in a marked increase in the electrical conductivity a for both blends. This increase in a was attributed to the formation of the donor—acceptor complex with the rubber matrix. The effect of addition of different doses of Fast Extrusion Furnace CFEF) black on a at the characteristic concentration 7.5 phr of ZnO has been also measured.The temperature dependence of electrical conductivity of rubber blends containing ZnO showed thermal activation with increasing temperature obeying the well known Arhenious relation.The addition of carbon black to rubber blends showed the thermal activation of conductivity at low concentration of black. For high concentration of black. However, the conductivity is nearly temperature independent, this has been attributed to touching effect of carbon black particles.TvIn moderate concentration case, the conduction is markedly affected by the separation distance between carbon black particles or aggregates.The thermal expansion of these hopping paths results in a descending behaviour of 0—with T which is characterized by a negative value of temperature coefficient of conductivity CTCC).The effect of static pressure on a for these rubber blends showed an independence of conductivity on pressure for high and low concentrations of carbon black while a decrease in conductivity with increasing pressure was observed for 40 phr of CFEF). This was attributed to the breakage of carbon black chain leading to an increase of separation distance between carbonparticles.