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SELF-CROSSLINKABLE PLASTIC-RUBBER BLENDS BASED ON EPOXIDISED NATURAL RUBBER

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Melt mixed blends from poly (vinyl chloride)and epoxidised natural rubber are self-crosslinkable and immiscible. Addition of carboxylated nitrile rubber to PVC-XNBR binary blend can result in miscible and self-crosslinkable ternary blend.

Key words : Epoxidised natural rubber, Carboxylated nitrile rubber, Crosslinking, Miscibility, Poly (vinyl chloride).

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INTRODUCTION

Functionally reactive polymers can be judiciously selected to develop self-crosslinkable blends. Several such polyblends, wherein the reactive groups of two polymers interact during moulding to form chemical crosslinks in the absence of any crosslinking agents, were developed recently (De, 1990). Epoxidised natural rubber (ENR)/carboxylated nitrile rubber (XNBR) (Alex *et al.*, 1990), ENR/ Chlorosulphonated polyethylene (Mukhopadhyay and De, 1991), ENR/Polychloroprene (Alex *et al.*, 1991) are to name a few.

Poly (vinyl chloride) (PVC)/ENR blend is self-crosslinkable during high temperature moulding and the system is immiscible as studied by dynamic mechanical analysis. XNBR has been reported to form self-crosslinkable and miscible blends with PVC (Ramesh and De, 1990). Again, XNBR and ENR are able to crosslink between themselves during moulding and form miscible self-vulcanizable rubber-rubber blends (Alex *et al.*, 1990). So, it was thought that the incorporation of XNBR to an immiscible blend of PVC/ENR will have profound effect on miscibility.

EXPERIMENTAL

The PVC sample used was of the suspension polymerized grade S 67-311 with a K-value 66 to 69 and was supplied by National Organic Chemical Industries Limited, Bombay, India. ENR was obtained from the Malaysian Rubber Producers' Research Association, England and XNBR from Polysar Limited, Sarnia, Canada. The ENR sample was 50 mol% epoxidised natural rubber and XNBR belonged to grade Krynac-221, with 7 mol% carboxylated monomer and medium high bound acrylonitrile level.

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