

STUDIES ON BLENDS OF SUPERIOR PROCESSING NATURAL RUBBER AND EPDM

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Natural rubber is easily attacked by ozone, affecting strength, surface finish and durability of rubber products, especially of those used outdoors. Blending of EPDM with superior processing natural rubber was attempted to develop natural rubber compounds with improved ozone resistance and extrusion properties. A blend of EPDM and SP-20 in the ratio 30:70 showed optimum properties. Reinforcement of the blend using FEF black and the effect of china clay and surface modifying agents DEG, TEA and Si69 in the filled compounds were studied. The blending resulted in better ozone resistance, extrudate finish, reduced die swell and moderate mechanical properties.

Key words : Natural rubber, Blend, EPDM, Ozone resistance, Extrusion property.

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INTRODUCTION

With the modernisation of the automobile industry, need has arisen for high quality rubber products in applications such as wind screen channels. Ethylene propylene copolymer (EPM) and terpolymer (EPDM) are preferred in such applications considering their excellent weathering resistance. Compounds based on blends of EPDM and natural rubber (NR) have been developed for achieving economy in such applications. The extent of improvement in ozone resistance of NR brought about by blending with EPM and EPDM rubbers has been studied by Andrews (1966), Wilchinsky and Kresge (1974), Mathew (1984) and Mathew *et al.* (1988). Physical incompatibility of EPDM with other elastomers was considered by Walters *et al.* (1962) and they

found dispersed regions varying from 0.5 to as much as 6 microns in size. Methods of achieving a satisfactory level of covulcanization of NR and EPDM have also been reported (Tobing, 1989). However, superior processing form of natural rubber (SP rubber), with its excellent extrusion characteristics, is considered to be more ideal than ordinary NR for blending with EPDM, especially in products made by extrusion, and the present work is an attempt in this line.

EXPERIMENTAL

A masterbatch form of SP rubber containing 80 per cent vulcanized rubber (KRI 80), which is a superior processing natural rubber made by blending 80 per cent partially vulcanized and 20 per cent