

PREFACE

Short fiber reinforcement of rubber has been tried as a substitute for continuous cords for the past several years. Most of the earlier work on short fiber reinforcement of rubber was concentrated on the studies of effect of orientation on the properties of the composites and to some extent on the selection of appropriate fiber. However, certain specific aspects which are pertinent to the development of short fiber reinforcement such as, fracture criteria, rheological behaviour, mechanism of adhesion and its effect on viscoelastic properties have not been studied as yet in detail.

The subject matter of this thesis has been presented in seven chapters.

The introductory chapter deals with a brief review of earlier work in this field and the scope of the present work.

The experimental procedures have been described in Chapter II.

Chapters III and IV deal with the short jute and short glass fiber reinforced natural rubber composites respectively. Mechanical properties, adhesion, processing characteristics and fracture criteria both in the presence and absence of particulate fillers have been reported.

The results of studies on short jute and glass fiber reinforcement of styrene-butadiene rubber have been discussed in Chapter V.

The influence of adhesion, overcuring, fiber orientation and particulate fillers on the viscoelastic properties of the composites have been reported in Chapter VI.

Chapter VII is devoted to the studies on rheological behaviour of short jute fiber-rubber compounds. Effects of temperature, particulate fillers and type of base rubber on shear viscosity, die swell and extrudate distortion have been reported.