Guar gum is a useful and versatile natural polysaccharide. Although its intrinsic properties are suited for use in many industries, it has certain inherent drawbacks and for certain end uses, it is found to be wanting.

Modifications of guar gum by physical, chemical and thermal means yield products which exhibit superior properties in comparison to native gum. Its ether derivatives are of particular interest and as such, from literature and commercial trends, it is given to understand that many such derivatives are used in industries viz. oil-well drilling, mining, explosives, textiles, paper, food etc.

Although much work has been done in the past in this field, much of the literature is couched in patents and therefore, neither readily available nor easily implementable. Besides, little systematic knowledge exists on the correlation degree of substitution of guar gum with its properties both basic as well as those related to particular end use. This aspect forms the basis of the thesis, which aims to understand the effect of type and degree of modification on the properties of guar gum as well as its usefulness in textile printing.

Chapter-I deals with the introduction, structure, properties and uses of guar gum in industry. Reference is made to guar gum derivatives for their industrial and other applications.
Chapter-II, describes the materials and methods used for studying the properties of guar gum and its derivatives.

In Chapter-III, procedures for preparing derivatives viz. O-(2-hydroxypropyl), O-(2-hydroxyethyl) and O-carboxymethyl guar gum are described. The procedures for measuring the extent of reaction of the reagents with the gum is also presented. Alkaline degradation, which brings about structural changes, of guar gum is discussed with a view to understanding its effect on solution properties of derivatives.

In Chapter-IV, the properties of guar derivatives as a function of molar substitution is discussed. An attempt is made to correlate the effect of molecular weight on solution properties.

Textile industry is one among the major users of guar gum and its derivatives. These derivatives, prepared in the laboratory, are evaluated as printing thickeners for disperse dye printing on polyester-cotton fabric. The performances of derivatives, in that respect, is discussed in Chapter-V.

At the end of the thesis, important aspects are summarized alongwith conclusions.