III PURPOSE OF STUDY

The review of literature indicated the increasing interest in acrylic products (including acrylamide) for textile finishing. The suitability of acrylamide in particular so also its reactivity with glyoxal was noted. However its influence for wear or service improvement has not been reported. An attempt has been made in this work to study its influences on abrasive wear of fabrics and on other properties.

Acrylamide and glyoxal were used in combination for finishing of textiles. Acrylamide finish was prepared with ammonium persulphate as catalyst in a study carried out by Frick et al (28). Joshi and Shenoi (41) have also reported the use of glyoxal-hydrogen peroxide as a new redox system, in dyeing of silk and nylon with acid, reactive and direct dyes at lower temperature.

Acrylic monomers like acrylic acid acrylamide, acrylic ester etc are being allowed to polymerise on cellulose. This has improved desirable properties of cellulose as reported by several researchers - Frick (28), Chavan and Deshpande (12). It was found by Doshi and Verghese (21) that wrinkle resistance and smooth drying properties can be imparted to cotton fabrics by applying acrylamide to introduce an amide group and then formaldehyde to form a cross-link.

Experimental works on using glyoxal-hydrogen peroxide (13) or/..

or formaldehyde-hydrogen peroxide (40) as redox system with the normal polymerising conditions with dry wet cure system were carried out in the Clothing Textiles Department. The use of formaldehyde hydrogen peroxide system along with cure conditions has been studied in the research by Chaudhury (13), while mixed redox system, like glyoxal-hydrogen peroxide and sodium thiosulphate, ammonium persulphate, have been studied with interest in the present work.

Recent work (38) with flexible polymer latics such as polyacrylates and polyurethanes has indicated that thin polymer deposition on fibre, yarn and fabric surface can increase both flex and edge wear abrasion resistance of durable press cotton fabrics. These films are tough and flexible and so they have less tendency to stiffen the fabric than did earlier vinyl and rubber coatings. They appear to protect the fibre from surface damage because the coatings rather than the fibre absorb the abradant energy.

An attempt has been made to have conversion of monomers (through appropriate polymerising conditions) into fibrous partially linear polymers.

Thus, in the present study, an attempt has been made to first compare abrasive wear provided by flat, rotary impact and dry and wet impact abrasions. Its utility to know the influence of above acrylamide finish on the abrasion resistance when used as textile finishing, has been studied in the latter part.

The/..

The specific objectives of the study were as follows:

1. To compare varying abrasions - flat, rotary, impact and dry and wet impact.
2. To study the influence of acrylamide finish on
   a) the improvement of abrasive wear resistance of fabrics.
   b) tensile strength and elongation properties of fabrics.
   c) tearing strength of fabrics.
   d) stiffness of fabrics.
   e) wrinke recovery of fabrics.
   f) air permeability of fabrics
3. To study the utility of the same.