VI SUMMARY AND CONCLUSIONS

The present study deals with various types of abrasion like flat, rotary, impact and dry and wet impact abrasion. The influence of acrylamide finish on above mentioned abrasion and other properties of fabrics was also studied.

Abrasion is an important factor in wear. It is described as rubbing away of the component fibres and yarns of the fabric, as it occurs mainly in laundering also.

It was revealed from the review of literature that many researchers have dealt with abrasion, some were on machines, others compare laboratory abrasion with actual wear. Studies were also noted on the nature of abrasion wear i.e. fast, slow, etc. and so also on flat, edge, rotary etc. in dry as well as wet conditions.

In the present study, three fabrics, Cotton, Polyester/Cotton (67/33) and Polyester/Cotton (50/50) were used.

Work was planned to study the abrasive wear on laboratory instrument.

In the present study, attempt has been made to compare different types of abrasions as mentioned above. In actual use fabrics/garments encounter with one or other/..

other of the above mentioned types of abrasion, so also during laundering. Fabrics were subjected to flat, rotary, impact and dry and wet impact abrasion, using Martindale's abrasion tester, accelerator, WIRA dynamic loading machine and impact abrasion testers respectively. Abrasion tests were done according to standard procedures. To keep the uniformity in the method of assessment, tensile strength loss was estimated after each type of abrasion test.

For the effect of dry, flat, rotary and impact abrasion experimental work was done in the Fibre and Textiles research unit at Strathclyde University of Glasgow. Effect of wet abrasion could not be studied because the above machines were not suitable for the test. For example WIRA dynamic loading machine is used for testing the thickness of carpet, which was used for impact abrasion tester. Therefore in the department of Clothing and Textiles, an impact abrasion tester which was fabricated in an earlier work to simulate dhobiwash, (dhobi means washerman) was used.

From the review of literature, especially recent ones, it was noted that there is an increasing interest in acrylic products (including acrylamide) for textile finishing of blends only with synthetic fibres. The suitability of acrylamide, in particular, so also its reactivity with glyoxal was noted. However its influence for/..

for wear or service improvement has not been reported. An attempt has been made in this work to study its influence on abrasive wear resistance of fabrics and on other properties.

Thus this work has been specific that the conversion of monomers (through appropriate polymerising (redox) condition) into fibrous partially linear polymers is used for finishing.

In the present work a comparison of abrasive-wear by flat, rotary, impact and dry-wet impact abrasions have been studied. Its utility to know the influence of acrylamide finish when used as textile finishing on the abrasion resistance has been studied in the latter part.

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 fabric.
   b) tensile strength and elongation properties of fabric.
   c) tearing strengh of fabrics
   d) stiffness of the fabrics
   e) wrinke recovery of fabrics and
   f) air permeability of fabrics.

3. To study the utility of the same.

Conclusions

After the study of the effect of abrasive wear under varying conditions of abrasion, in presence of acrylamide finish, following conclusions were drawn:

1. Abrading tendency was greater in flat abrasion than impact abrasion, followed by rotary abrasion which had shown the least abrading tendency.
2. Wet impact abrasion caused a little more damage to untreated and treated fabric as compared with dry impact abrasion.
3. Acrylamide finish protected fabrics against all the four types of abrasion through its lubricating action and flexibility.
4. Tensile strength loss decreased with acrylamide finish treatment.
5. Acrylamide finish descreased the elongation property of fabrics.
6. Acrylamide finish reduced the tearing strength of fabrics treated with all concentrations.
7. Acrylamide finish increased the stiffness of fabrics with increasing concentrations.
8. Acrylamide finish at low concentration improved wrinkle recovery but at higher concentration recovery angles were low.

9./..

9. In the case of loosely woven and varying yarn regularity of polyester/cotton (50/50) fabric, commonly known as polyester Khadi in India, the results showed variations. In order to improve the quality of such a fabric, yarn quality needs to be regular first.

Microscopic observations of the finish yarn indicated that acrylamide finish had adhered randomly to fibres and yarn but did not block pores.