# IMPROVEMENT OF THE USE-VALUE OF POLYESTER-BASED FABRICS

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## Abstract

The tendency to staining and the ability for stain retentivity of polyester fabrics can be decreased by basic treatment and tenside modification. The inflammability and risk of accidence of these textiles can also be reduced. This characteristic is also reflected in the rate of burning.

Though polyester textiles are attractive, durable and they do not need ironing, they are easily and persistantly stained and their inflammability is high.

This work sets the aim to decrease the tendency to staining, to lightening the release of dirt and to elaboration a flame-free finishing.

After the treatment of polyester textiles with 10% sodium hydroxide solution (at 20°C for 6 h or at 60°C for 15 min), the release of dirt increased from 5 to 50%, the retentivity of stain decreased from 50 to 20% with a minimum loss in strength. The values are identical with those usual for cotton [1].

Similar, but somewhat smaller effect can be achieved by a treatment with fatty acid based anionic tensides. By a heat treatment, the effects achieved can be made moderately washing-resistant.

Among the properties of synthetic fibres it is expedient to differentiate between inflammability and risk of accidence.

Because of thermoplastic fibres, the concept of risk of accidence had to be revaluated. Clothing has a protective effect only up to the temperature where its material suffers some physical or chemical changes. This is the limit temperature of protective effect [3, 4]. For synthetic fibres such as polyester fibres, this temperature is relatively low. Above this temperature the clothing becomes a source of danger. Further important characteristics of thermoplastic fibres are the heat and rate of their combustion. The heat of combustion is very difficult to measure for thermoplastic textiles. We applied a new concept and a new

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instrument following the mass decrease of a burning textile material in media with different oxygen contents as a funtion of time [5].

This principle is suitable for detecting smaller differences than the earlier methods (e.g. flame propagation rate and LOI).

The characteristics thus obtained have been complemented by biological studies and animal experiments have been elaborated for judging the protective ability and risk of accidence of different textile materials [6, 7, 8].

For the combustion resistance of polyester textiles experiments were carried out with brominated allyl phosphate derivatives and it was established that a sufficient resistance can be ensured by the partially brominated derivatives. The unsaturation remaining after the partial bromination makes a polymerization possible which in a moderate wash-fastness.

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