

## Evaluation of the properties of open yarn-woven blended fabrics after dyeing processes

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### ABSTRACT

The purpose of the study was to examine the effect of different treatments processes such as, treatment using sodiumhydroxide via conventional technique, via microwave irradiation technique, using sodiumhydroxide and methanol via microwave irradiation technique, and one bath one reactive dyeing on tensile strength, pilling tendency, air permeability, color efficiency and rubbing fastness properties of cotton/polyester/linen fabrics (CIP)plain fabrics, produced with ring spun yarns. The samples have the advantages of less hairiness, a smooth surface and improved mechanical properties, such as breaking force & elongation, color efficiency, rubbing fastness and air permeability. However, the pilling properties of the fabrics and the tensile strength of the fabrics produced with are better.

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### I. Introduction

**Spinning specification of blended fibers**

**Specification and advantage of blended fabrics**

**Effect of finishing and dyeing process on the produced blended fabrics**

**Material and methods**

The specifications of the yarns are given in the details in Table 1.

Specifications in weaving preparation are given in the details in Table 2; weaving mill condition: temperature ---- °C, humidity ---- %.

**Treatment and dyeing process of the blended fabrics**

**Pretreatment of fabric**

Fabric samples were mild scoured using 2gpl Na<sub>2</sub>CO<sub>3</sub> and 0.5 gpl non-ionic wetting agent (triton X100) at 80°C for 3h. The treated samples were then thoroughly washed with water, and dried in open air.

**Fabric treatment with sodium hydroxide**

Treatment of The polyester/cotton/linen fabrics (PCI) were carried out by the following techniques:

**Treatment of PCI using sodiumhydroxide via conventional technique**

The samples were immersed in a sodium hydroxidesolution 6% NaOHatL: R 1:30. The initial temperature was 40°C and the temperature was raised to boil in 30 min and then the boiling time was determined and reported. After the appropriate boiling time (1 h), the samples were neutralized using acetic acid with concentration of 6%, followed by distilled water rinsing, and finally open air drying.

**Treatment of PCI using sodiumhydroxide via microwave irradiation technique**

PCIwas impregnated in treatment baths containing 6% NaOH at L: R 1:30. Then the sample squeezed using laboratory padder to get 100% wet pick up. The sample rapped in a plastic sheet and put it in themicrowave at power of ----- for 3 min.. The PCIwere neutralized using acetic acid with concentration of 6%, followed by distilled water rinsing, and finally open air drying.

**Treatment of PCI using sodiumhydroxide and methanol via microwave irradiation technique**

Similar experiment was carried out using methanol as an accelerator with concentration of 50%.