Table 5. Effect of machine type on its optimum settings to achieve maximum strength of mercerized yarn. Error term is the mean square (Error) = 246700. a) Uses harmonic mean sample size = 1224. b) alpha = 0.01.

<table>
<thead>
<tr>
<th>Machine</th>
<th>N</th>
<th>Subset</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine 2</td>
<td>1224</td>
<td>877.2</td>
</tr>
<tr>
<td>Machine 3</td>
<td>1224</td>
<td>878.1</td>
</tr>
<tr>
<td>Machine 1</td>
<td>1224</td>
<td>896.0</td>
</tr>
<tr>
<td>Sig.</td>
<td></td>
<td>0.381</td>
</tr>
</tbody>
</table>

of combed/carded yarns increases or decreases, respectively.

- The effect of the wetting agent concentration is elevated by decreasing the yarn linear density and/or increasing the number of plies.
- The effect of the cold rinsing temperature is more obvious in higher quality yarns and fibres. The effect of the cold rinse temperature on Egyptian and Uzbek cotton combed yarns is more obvious than for carded yarns spun from Iranian cotton fibres.
- Statistical analysis shows that fibre type, yarn structure (carded/combed) and the number of plies have a significant effect on the optimum settings of the mercerising machine in achieving the maximum strength of mercerised yarn, while the linear density of single yarns and the mercerising machine type have no significant effect.

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References


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The Laboratory is active in testing fibres, yarns, textiles and medical products. The usability and physico-mechanical properties of textiles and medical products are tested in accordance with European EN, International ISO and Polish PN standards.

Tests within the accreditation procedure:
- linear density of fibres and yarns, mass per unit area using small samples, elasticity of yarns, breaking force and elongation of fibres, yarns and medical products, loop tenacity of fibres and yarns, bending length and specific flexural rigidity of textile and medical products

Other tests:
- for fibres: diameter of fibres, staple length and its distribution of fibres, linear shrinkage of fibres, elasticity and initial modulus of drawn fibres, crimp index, tenacity
- for yarn: yarn twist, contractility of multifilament yarns, tenacity,
- for textiles: mass per unit area using small samples, thickness
- for films: thickness-mechanical scanning method, mechanical properties under static tension
- for medical products: determination of the compressive strength of skull bones, determination of breaking strength and elongation at break, suture retention strength of medical products, perforation strength and dislocation at perforation

The Laboratory of Metrology carries out analyses for:
- research and development work, consultancy and expertise

Main equipment:
- Instron tensile testing machines, electrical capacitance tester for the determination of linear density unevenness - Uster type C, lnanometer

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