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| **Published Researches****الأبحاث المنشورة** |
| Title**عنوان البحث** | * The study of hydrophobicity and oleophilicity of 3D weft-knitted spacer fabrics integrated with silica aerogels
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| Abstract**خلاصة** | * The interest in multifunctional textile materials has been increased due to the health and safety measures of living beings, especially in severe conditions. Therefore, this study investigated the hydrophobicity, oil sorption capacity, and bending properties of untreated or uncoated and treated or coated 3D weft-knitted spacer fabric samples (92% polyester/8% spandex), i.e. sample 1, sample 2, and sample 3, having thicknesses of 2 mm (300 gm­2 ), 3 mm (350 gm­2 ), and 4 mm (540 gm­2 ), with silica aerogels (SAs) through the sol-gel method. SEM, FTIR-ATR, and surface roughness test of fabric samples were analyzed to comprehend the influence of SAs. The experimental results revealed the excellent hydrophobicity and oleophilicity of all the treated 3D weftknitted spacer fabric samples, providing a higher water contact angle (CA) 142 ‑ 0.84 and an oil sorption capacity 7.51 ‑ 0.08g/g and 6.88 ‑ 0.06g/g for vegetable oil and engine oil, especially of sample 2 owing to the most silica particles. The statistical analysis also demonstrated a significant performance (P < 0.05) of treated spacer fabric samples at the 0.05 level. Thus, these fabrics are suitable for an industrial application of hydrophobic and oleophilic properties.
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