



ANAHTAR KELİMELEER

- ✓ Hydrogel composite
- ✓ polyvinyl alcohol
- ✓ borax
- ✓ glutaraldehyde
- ✓ crosslinking

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ONE-STEP PREPARATION AND INVESTIGATION OF HIGH STRENGTH TEXTILE REINFORCED HYDROGEL COMPOSITES

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BURSA ULUDAĞ ÜNİVERSİTESİ

FEN BİLİMLERİ ENSTİTÜSÜ

TEKSTİL MÜHENDİSLİĞİ ANABİLİM DALI

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TEZ ÖZETİ

The aim of this thesis is to investigate development of woven fabric reinforced hydrogel composite structure with enhanced mechanical properties. In this respect, polyvinyl alcohol (PVA) in yarn form was reinforced with another durable cotton, flax, wool and viscose yarns to produce a hydrogel composite structure with improved resistance to the applied mechanical forces. For this purpose, PVA/Cotton (Co), PVA/Flax (F), PVA/Wool (W), PVA/Viscose (Vi) blended woven fabrics were manufactured for the forming fabric reinforced hydrogel composites. The hybrid woven fabrics were treated with different concentrations of glutaraldehyde and borax solutions. PVA yarns in the hybrid woven fabric turned into crosslinked gel structures, whereas cotton, flax, wool and viscose yarns remained in the woven

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Hydrogels have low resistance under the applied mechanical forces. This situation results in hydrogels to break during usage. In this regard, textile reinforced hydrogel composite presents an interdisciplinary approach to solve mechanical problems of hydrogels.

YAYINLAR

Natural fibers woven fabric reinforced hydrogel composites for enhanced mechanical properties. Koc, U., Aykut, Y., Eren, R. Journal of Industrial Textiles, <https://doi.org/https://doi.org/10.1177/1528083720944485>, 1-18, 2020 (SCI indekslerine giren dergi).

