

## Nano technology applications in textile to improve puncture resistant of fabrics.

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### **Abstract:**

Nanotechnology is an evolving technology, resulting in significant difference in product behavior. Applications of Nano materials in textiles are constantly growing to improve performance and create unparalleled textile functions for their enormous technical, economic and ecological advantages. It is expected that Nano materials will either enhance existing properties or add new functionalities to textiles such as dirt and water repellent, breathability, UV protection, conductive and anti-static properties, wear and wrinkle resistance or stain resistance or bacteria. Due to advancement in manufacturing of Nano materials, a new developed materials specified in the area of protection have been discovered such as; carbon Nano tube (CNT) and Graphene CNT have unique mechanical properties, particularly in improving tensile strength, and is one of the strongest known materials used in high-performance nanocomposites due to their unique mechanical properties. And its properties make it the best to reinforce polymers and have a great potential for use in the manufacture of ballistic-resistant materials. Graphene is an allotrope of carbon that exists as a two dimensional sheet. Graphene is as a single layer of graphite, where all the carbons exist in a regular hexagonal array, it's the first two dimensional materials to be available. It is both the lightest known substance and the strongest ever produced. The ability to be solid, strong and flexible at the same time gives this incredible potential for use as a body armor or shielding. **Research Aim:** Develop and improve puncture resistance factor for cotton fabrics using Nano technology in Egypt. **Results and discussion:** The most important results are as follows: Emphasize the effective role of Nano technology in puncture resistance in textiles. Through Nano technology and Nano additives a wide range of properties could be added to fabrics. The impact proof treatments of fabrics and material development have several applications. The mechanical properties of textile fibers can be enhanced by incorporation of nanoparticles in fiber, such properties include increasing puncture resistance.

### **Keywords:**

*Nano technology  
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