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Material Science: Fabric/Textiles

Title: ***Panel for absorbing mechanical impact energy (UMD 12-04)***

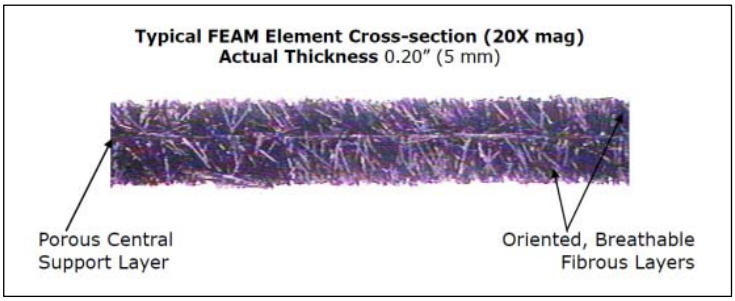
Inventors: ***Armand Lewis et al.***

Applications: New fibrous energy absorbing materials (FEAM) for use in all types of sports and military helmets, padding, vests, and similar gear.

Benefits: These materials are lightweight, low cost, and customizable, with the ability to blunt impacts effectively and to spring back instantaneously, while offering breathable comfort. The materials are light, breathable and can smoothly conform to body contours, increasing the wearer's safety and comfort.

Technology Description: These materials comprise panels in which many short fibers are attached at one end to a substrate, so that the closely-packed fibers extend away from the substrate in an essentially perpendicular manner. The panels may be used alone or multiple panels may be stacked. A FEAM material according to the invention can be used by itself or to enhance existing sports/military helmet energy absorption systems (e.g. making use of foam layers). The material blunts impact like an airbag. FEAM operates as a flexible 'spacer' fabric; worn between the helmet or armor and the body surface providing a broad, spring-like compressible air space. FEAM performance can be customized based on fiber denier and length used in construction. FEAM materials can serve as a breathable liner, a layer inside existing cranial and body protection garments such as football, hockey, baseball, bicycle and skateboarding helmets and body armor. This new fibrous material could also provide other body padding like shin, elbow and knee pads. FEAM elements can be effectively enveloped in fabric to provide a complete stand-alone energy-absorbing pad configuration or adhered to existing padding.

Patent Status: This technology is the subject of a pending U.S. patent application.



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