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## Hemp Composites for Construction Materials and Biodegradable Packaging

-Potential Applications • Biodegradable packaging especially as an alternative to corrugated cardboard • Construction materials such as gypsum boards, terracotta, and masonry units • Clay pigeons for recreational shooting Benefits and Advantages • Leverages the inherent strength of hemp fibers and the short maturation time of the plant • Highly versatile and can be molded into various shapes • Biodegradable and biologically safe • Provides carbon-negative characteristics and can absorb gaseous emissions from air • Decreases consumption of trees used for industrial materials Invention Description Researchers at Arizona State University have developed a method for producing a versatile hemp composite that can be formed into stand-alone sheets (for example, for manufacturing corrugated boxes), molded into various shapes, or be added to gypsum boards to enhance durability. The production steps include first shredding and pulverizing hemp stalks, then adding recycled paper and oil to yield a hemp mixture, removing water from the hemp mixture, and finally drying the hemp mixture to form the composite. The mixture's hemp-to-water weight ratio can be adjusted to achieve a desired elasticity of the hemp composite. This allows the composite to have potential as building bricks or as an alternative to terracotta. Background Paper products such as conventional corrugated boxes are made from trees which take an average of 20 years to reach a sufficient size for harvesting. Hemp, on the other hand, takes only four months to become harvestable. At the cellular level, hemp is a structurally stronger plant than typical woods, and the tensile strength of hemp fibers can exceed that of even certain types of steel. With these advantages, use of hemp in packaging and building materials has the potential to form a variety of high-strength products while lowering overall feedstock usage. [Faculty Profile of Professor Elham Fini](#)

