

COTTON: THE NATURAL CHOICE FOR FIRE SAFETY IN MATTRESSES**Kenneth Oliver****Jones Fiber****Memphis, TN****Abstract**

In the early 1970's the federal government promulgated a smolder ignition standard, 16 CFR 1632, for all mattresses produced and sold in the United States. Cotton was being used in mattresses in large quantities at that point in time. Cotton did not have the inherent ability to meet the standard. Much work ensued by the industry and the USDA to identify ways to help cotton perform satisfactorily to comply with the standard. Several methods were identified and developed to help cotton maintain market share. Polyester and polyurethane foam could comply very easily with the smolder ignition standard but not with an open flame standard. Basically there was born an "uneven playing field" for cotton. As a result cotton lost much market share in mattresses for several decades. In the years that followed research showed that the means by which mattresses (the largest single fuel source in the home) became involved in household fires began to change from smoldering cigarettes to children playing with lighters. The CPSC began to look at the creation of an open flame test protocol to use in an open flame standard. On January 1, 2005 the state of California became the first to implement an open flame standard for residential mattresses with their state regulation TB 603. The federal government followed with the implementation of 16 CFR 1633, their version of an open flame protocol, on July 1, 2007. With the advent of an open flame standard the technology that was developed for cotton in the early 1970's was again employed to aid mattresses for compliance with the new standard. In late 2003 one of the large national mattress manufacturers became the first to advertise open flame compliant mattresses. The product they used to allow them to be the first to market was cotton. Their system was developed using cotton quilted in the top and bottom panels and boarder panels of their constructions. They then sewed the product together with aramid thread. Hence available, cost effective FR system hit the marketplace and the primary component was cotton.

To date much work has gone into FR system development for mattresses. There are two common means by which cotton is made fire resistant. One employs the use of Boric Acid (Boron) and the other uses phosphates. Much research has been done to prove the safety and durability of these products. As a result cotton continues to be a very cost effective solution for mattress manufacturers and continues to gain market share.