

Forensic Fiber Examination and Analysis

REFERENCE: Houck MM: Forensic fiber examination and analysis; *Forensic Sci Rev* 17:29–49; 2005.

ABSTRACT: Fiber evidence suffers from the same misperception as many other types of trace evidence, that it is weak in its significance. Despite this pejorative perception, textiles make excellent evidence because of their presence in our daily lives and the variations they demonstrate. Fibers from the textiles in our and others' environments transfer from surface to surface and variously persist. Textile fibers are produced with specific raw materials, production methods, and postproduction alterations that create this variety. The distribution and use of the fibers add to their distinctive significance. The number of methods used in analysis helps to define and identify the fibers. Millions of color shades are possible in textiles and yet color analysis is not a universal technique in forensic laboratories.

Transfer study after transfer study demonstrates the rarity of finding unrelated fibers at random that exhibit the same microscopic characteristics and optical properties. Examples from casework also demonstrate the usefulness of forensic textile fiber analysis in demonstrating probative associations in criminal investigations. Additional work needs to be done to fortify and support these conclusions and provide the verification necessary to remove the taint of "could have."

KEY WORDS: Color, fibers, significance, textiles, trace evidence.
