

Dyeable fluoropolymer fibers and films

Description of Technology: This invention relates to fluoropolymer fibers and films which can be modified by cationic agents, such as cationic dyes. The fiber or film comprises a blend of a first and a second copolymer, or it comprises a terpolymer, the blend or terpolymer having (1) an acid or ionic functionality provided by a pendant group represented by the formula $-(O-CF_2)_n-O-CF_2SO_3Z^+$, wherein R and R' are independently selected from F, Cl or a perfluorinated alkyl group having 1 to 10 carbon atoms, $n=0, 1$ or 2 , and Z^+ is H^+ , an alkali metal cation, or a cation derived from a compound selected from the group consisting of a cationic dye, a cationic whitener, a cationic flame retardant, a cationic antistatic agent, and mixtures thereof, and (2) a larger amount of a fluoroalkylvinylether, a fluoroalkene, or ethylene functionality. Such fibers and films are useful in various consumer goods where the product is desirably colored, whitened, antistatic, or flame retardant.

Patent Listing:

1. **US Patent No. 6498216**, Issued December 24, 2002, "Dyeable fluoropolymer fibers and films"
<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HTTOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6498216.PN.&OS=PN/6498216&RS=PN/6498216>
2. **US Patent No. 6620903**, Issued September 16, 2003, "Dyeable fluoropolymer fibers and films"
<http://patft.uspto.gov/netacgi/nph-Parser?Sect1=PTO2&Sect2=HTTOFF&p=1&u=%2Fnetacgi%2FPTO%2Fsearch-bool.html&r=1&f=G&l=50&co1=AND&d=PTXT&s1=6620903.PN.&OS=PN/6620903&RS=PN/6620903>

Market Potential: This invention relates to fluoropolymer fibers and films which are receptive to cationic modifying agents such as dyes, whiteners, antistatic agents, and flame retardants, and the fibers or films formed by treatment of the receptive fibers or films of the invention therewith. Such fibers and films are useful in various consumer goods where the products are desirably colored, whitened, antistatic or flame retardant.

Among the properties of fluoropolymers, especially perfluorinated polymers, which make them particularly useful are low friction, hydrophobicity, and chemical inertness. These very properties, however, conspire to make dyeing of fluoropolymers problematical since many dyeing processes involve aqueous baths and reactive dye sites. As a result of these problems, it has become common practice to color fluoropolymers using pigments.

Benefits:

- Low friction
- Hydrophobicity
- Chemical inertness

Applications:

- Consumer goods where the products are desirable colored, whitened, antistatic or flame retardant

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