

FROM FIBER TO FABRIC: ACETATE

INTRODUCTION

Initially invented in Europe as a varnish for airplane wings, acetate was first produced in the United States in 1924 making it the second oldest manufactured fiber. Like rayon, acetate is a cellulose-based fiber that was initially only an experimental fiber. Before mass production could occur, modifications to the dyeing process was necessary before it could be usable. Acetate was the first thermoplastic (heat sensitive) fiber to be introduced to consumers (Kadolph, Langford, Hollen & Saddler, 1993). Originally, consumers were surprised that a fabric could melt when ironed.

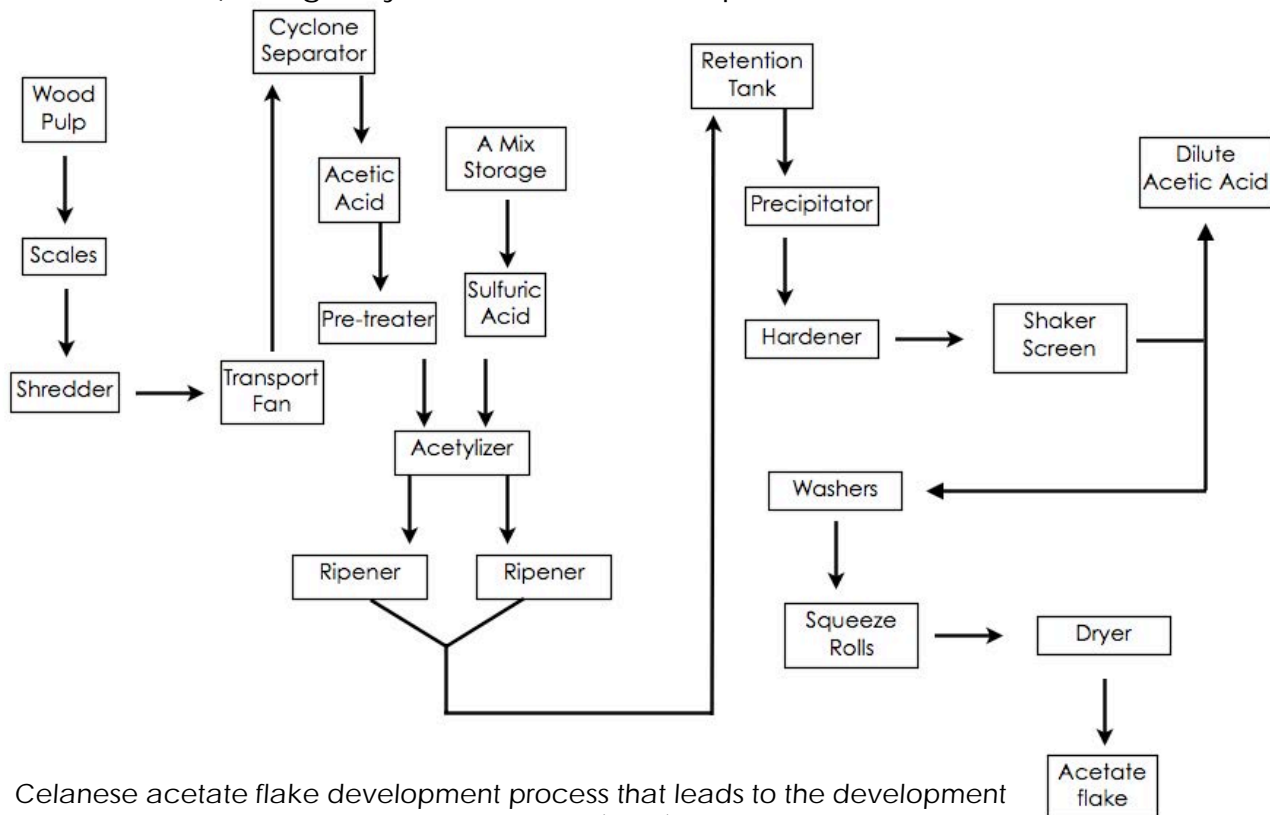


Figure 1: Celanese acetate flake development process that leads to the development of acetate fabric adapted from Celanese Corporation (2012).

In addition to the early discovery that acetate's chemical structure was not compliant with the current dyes, it was also soon discovered that pollutants and fumes in the air caused acetate fabrics to discolor (Cohen & Johnson, 2010). The dyeing process was once again changed to help correct this problem that resulted in solution dyeing, a process that can now be used on all manufactured fibers (Kadolph, Langford, Hollen & Saddler, 1993). However, acetate fabrics are still somewhat sensitive to discoloration due to air pollutants (Cohen & Johnson, 2010). Like rayon, acetate is often used as a substitute for silk, but acetate is much weaker than either rayon or silk and is generally used for apparel that will not be worn often (Kadolph, Langford, Hollen & Saddler, 1993). Specifically, special occasion clothing is made from acetate fabric.



Figures 2 and 3: Taffeta fabric (100% Acetate).

ADVANTAGES OF ACETATE FABRIC:

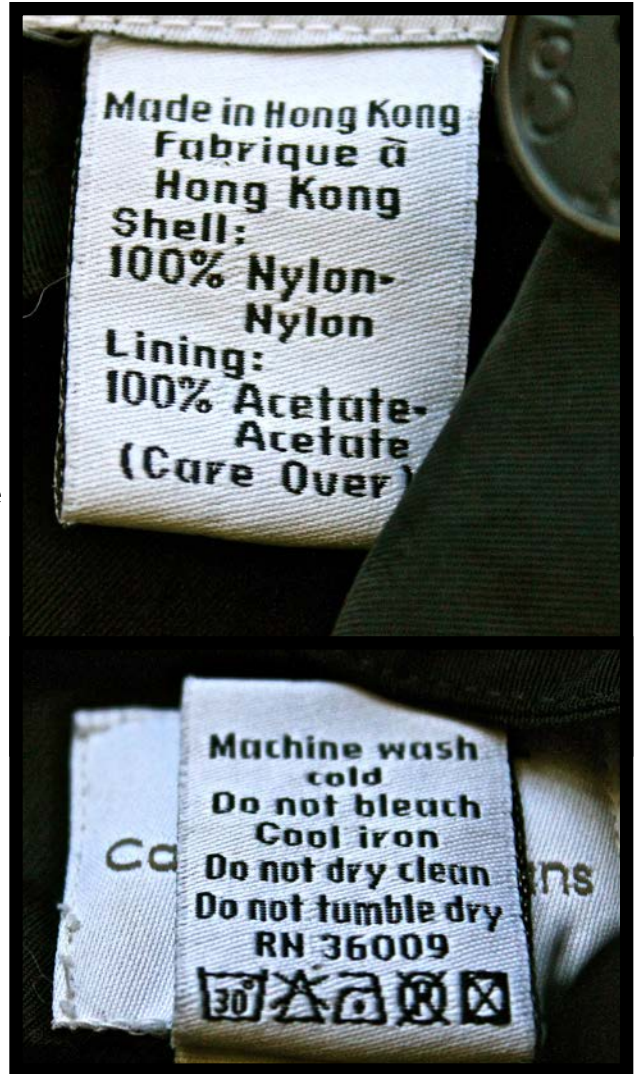
- Excellent drape (a fabric's ability to fold while worn)
- Luxurious hand (the feel of a fiber, yarn, or fabric to the wearer)
- High luster (reflection of light on fabric)
- No pilling
- Little static
- Low cost
- Holds white very well

DISADVANTAGES OF ACETATE FABRIC:

- Poor resiliency (fabric does not return to original shape or form after being altered)
- Poor elasticity
- Poor tenacity (ability to withstand stress)
- Low abrasion resistance
- Poor strength
- Thermoplastic (melts when heated)
- Susceptible to wrinkles
- Most often needs to be dry clean

END USES OF ACETATE FABRIC:

- Apparel: lining, graduation gowns, neck ties, special occasion wear, dresses, ribbons, blouses, scarves
- Interior: draperies, upholstery, quilted items



Figures 4 and 5: Fiber content and care labels.

REFERENCES:

- Cohen, A.C., & Johnson, I. (2012). *J.j. pizzuto's fabric science* (10th ed.). New York: Fairchild Books.
- Kadolph, S.J., Langford, A.L., Hollen, N., & Saddler, J. (1993). *Textiles* (7th ed.). New York: Macmillan Publishing Company.
- Liddell, L., & Samuels, C. (2012). *Apparel: Design, textiles & construction* (10th ed.). Tinley Park, IL: Goodheart-Wilcox.

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FIBER & FABRIC
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