

Clothing and TEXTILES

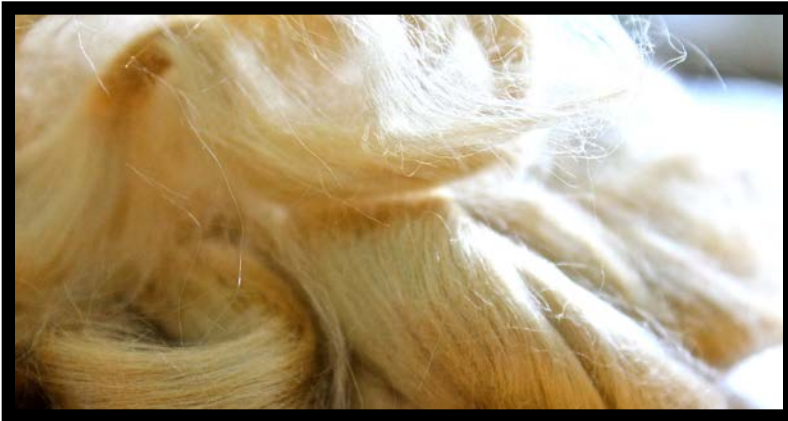
UTAH STATE UNIVERSITY COOPERATIVE EXTENSION

FROM FIBER TO FABRIC: SILK

INTRODUCTION

Silk is a protein fiber made by silk worms and is the only natural fiber that is a filament fiber. Originally, it was believed that an ancient Chinese princess was the first to discover the process for manufacturing silk fabric from the filament fiber produced by silk worms. Even though this was considered to be a legend, the first country to manufacture silk fabric was China. According to Kadolph, Langford, Hollen, and Saddler (1993), China was the only country producing silk for approximately 3,000 years before spreading to other Asian countries. Japan is currently manufacturing more silk than any other country in the world.

Sericulture (silk production) is the process used to produce the raw silk filament used create skeins of the fiber (Field, 2011). According to Field (2011), the first step in the process is the harvest of mulberry plants used to feed the silk worm. After the silk worm produces a cocoon, the filament used to produce the fiber is extracted from the cocoon during a process called reeling (Field, 2011). The filament from the cocoon is called raw silk (see Figure 3). The second stage in the process of creating silk fabric involves the manufacturing of the raw silk into various forms. The thread is used to weave or knit a variety of clothing and textile related products (Field, 2011).



Figures 1 and 2: Tussah silk fiber.



Figure 3: Raw silk fabric.

Tussah silk is “wild” silk, or silk from worms not specifically bred to produce silk. This fiber tends to be less uniform and shorter in length. Further, it is a light brown color rather than the white silk produced by sericulture worms. Duoppioni or dupion is also common and is created when two worms form a cocoon together, resulting in fibers that vary in thickness and colors (Cohen & Johnson, 2010).



Figures 3 and 4: Silk fabric.

ADVANTAGES OF SILK FABRIC:

- Luxurious hand (the feel of a fiber, yarn, or fabric to the wearer)
- Excellent drape (a fabric's ability to fold while worn)
- Wonderful luster (reflection of light on fabric)
- Hydrophilic
- Stain resistant
- Strong but lightweight

END USES OF SILK FABRIC:

- Apparel: luxury items, wedding dresses, evening gowns, blouses, scarves, neckties
- Interiors: pillows, wall hangings, draperies, upholstery

DISADVANTAGES OF SILK FABRIC:

- Fair abrasion and resiliency
- Turns yellow if bleached
- Poor resistance to exposed sunlight
- Expensive
- Degrades over time with exposure to oxygen, making it difficult to preserve

REFERENCES:

Cohen, A.C., & Johnson, I. (2010). *J.j. pizzuto's fabric science* (9th ed.). New York: Fairchild Books.

Field, J. (2011). North american silk industry. Berg Encyclopedia of World Fashion and Dress, Volume 3. DOI: <http://dx.doi.org/10.2752/BEWDF/EDch3212>

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
BASICS

Wcj "Ucv'Wpkgtuk\ 'ku'eqo o kvf "v' r tqxf lpi "cp'gpxkqpo gpv'htgg'htqo "j ctuuo gpv'cpf "qvj gt'htqo u'qh'kngi cni' f kuetko kpcvkqp'dcugf "qp'tceg."eqmt.'tgrki kqp.'ugz.'pvcvkpcn'qtki kp.'ci g'62"cpf "qif gt+ 'f kucdkk\.'cpf 'xgvtcpau'ucwu0 WUWau'r qre{ "cnuq'r tqj ldku'f kuetko kpcvkqp'qp'vj g'dcuku'qh'ugz.wcn'qtkpvcvkqp'kp'go r nq{ o gpv'cpf "cecf go le'tgrv'gf " r tcevegu"cpf "f gekukqp0 "

Wcj "Ucv'Wpkgtuk\ "go r nq{ ggu'cpf "uwf gpw'ecppqv."dgecwug'qh'tceg."eqmt.'tgrki kqp.'ugz.'pvcvkpcn'qtki kp.'ci g." f kucdkk\.'qt'xgvtcpau'ucwu."tghwug'q'j kg=f kiej cti g=r tqo qv=f go qv=vgtto kpcv=f kuetko kpcv'kp'eqo r gpucvkqp= qt'f kuetko kpcv'kgi ctf lpi "vgtto u.'r tkxkngi gu."qt'eqpf kkpqu'qh'go r nq{ o gpv.'ci ckpu'cp{ 'r gtuaq'qvj gty kug's wcn'kgf 0' Go r nq{ ggu'cpf "uwf gpw'cnuq'ecppqv'f kuetko kpcv'kp'vj g'encuatqo . 'tgu'kf gpeg'j cmu."qt'kp'qp'qh'eco r wu.'WUW ur qpuqtgf "gxgpw'cpf "cevkxkku0 "

Vj ku'r wdrkcvkp'ku'kuwgf 'kp'hwvj gtcpeg'qh'Eqqr gtcv'xg'Gz'v'pukqp'y qtm'cew'qh'O c{ ': "cpf 'Lxpg'52.'3; 36.'kp" eqqr gtcvkqp'y kj 'vj g'WUOF gr ctwo gpv'qh'Ci tlewwtg.'P qng'GOE qengw.'Xleg'Rt'gukf gpv'ht'Gz'v'pukqp'cpf " Ci tlewwtg."Wcj "Ucv'Wpkgtuk\ 0HE IE nqj lpi (Vgz'v'gu4234/47r t+ "