

“Everything I know about Linen”

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Oldest Fiber

- Earliest “clothing” = animal skins
- Switzerland 10,000 B.C.
- Found in civilizations all over the world
- Egyptians called it “woven moonlight”
- Fineness never duplicated (360 strands/thread)
- Latin *linum usitatissimum*
extremely useful flax plant
- Symbol of luxury and wealth
- Used for trading/commerce

Well travelled flax

- Earliest found in Switzerland and Germany (10,000 B.C.)
- Egypt and Mediterranean (3,000 B.C.)
- Phoenician traders took it to Europe and Ireland
 - 1600's British gov't controlled wool production in Ireland, encouraged linen
 - Water in the River Lys in Belgium exceptional for retting, produced high quality fibers
- Settlers brought it to Americas
 - Not great weather for plants but good seeds, Irish linen still grown from Canadian seed

Today

- China is major producer of flax fiber
 - Fiber not as strong as European varieties, labor intensive production done by hand
- Other producers: Russia, Ireland Belgium, New Zealand

Linum usitatissimum

- About 100 days to grow
- Likes cooler climates (better quality fiber)
- 2-4 feet high
- Tiny blue, white or pink flowers

“Extremely Useful Flax Plant”

- All parts of the plant are used
 - High fiber food
 - Pet food
 - Linseed oil
 - Linoleum
 - Paint
 - Paper
 - Blended with cotton for bandages
 - Heating, similar to soft coal
 - Replacement for fiberglass (more eco friendly)

Preparing Linen Fiber

- Harvesting
 - Done by hand to preserve the luster of the fiber
 - Tapered ends make smooth yarn
- Rippling
 - Plants are passed through coarse combs to get rid of seeds and leaves

Preparing Linen Fiber

- Retting
 - Woody stalks are softened/decomposed
 - Water
 - Dew in the fields (4-6 weeks)
 - Running streams (smells better)
 - Tanks or pools (2-4 weeks)
 - Chemicals (hours or days)

Preparing Linen Fiber

- Breaking
 - Rollers crush the bark (called shives)
- Scutching
 - Removes the shives from the fiber with rotating paddles
- Heckling
 - Combed to prepare for spinning
 - Separates into “line” (long fibers) and “tow” (short fibers)

Preparing Linen Fiber

- Spreaders
 - Machines that combine shorter lengths to make slivers and then make into roving
- Wet spun
 - Easier to work the fiber
- Dried

Fiber Properties

- Shape and appearance
 - Color ivory to tan or gray, lighter colors finer fiber
 - Nodes give “rough” texture
 - 5-12 inches long
- Strength
 - Very strong
 - Stronger when wet
- Elasticity (ability to stretch)
 - Not very elastic

Fiber Properties

- Resiliency/dimensional stability(ability to return to original shape)
 - Not very resilient, but dimensionally stable
 - Minimal shrinkage in the fiber
 - Iron when damp
- Moisture absorption
 - Very absorbent
 - Great for cooling, towels, cleanable
- Biological
 - Mildew resistant

Linen Textiles

- Once spun can be used for weaving, knitting
- Huge variety of weights and weaves
- Takes dyes well
- Finishing:
 - Mechanical/chemical
 - Permanent/nonpermanent

Finishing

- Adds other characteristics to the fabric
- Beetling (mech/perm)
 - Flattening with rollers and hammers
- Bleaching (chem/perm)
 - Whitens, but weakens the fiber
 - Needs to proceed color applications
- Calendaring (mech/nonp)
 - High pressure pressing
 - Can be an embossing process

Finishing

- Sizing (chem/nonp)
 - Stiffens during weaving
 - Adds weight, decorator fabrics

Fiber and Structure work together

- Stretch fiber vs knit fabric
- Satin weave vs calendared finish
- Smooth fiber vs “scaled” fiber
- Pilling

Why do we love linen?

- Lots of variety
- International Year of Natural Fibers 2009
- Breathable/absorbant
- Easy to work with
 - Holds a press
 - Topstitching great
- Easy to care for
 - Washes, dry cleans, resists stains

What to do with Linen

- Pre-wash
- Iron damp
- Pick patterns with details
 - Tucks, seams, topstitching, embroidery, pleats, piping, bound button holes, godets,
- Garment types
 - Jackets, pants, blouses, baby clothes, lingerie, skirts,
- Home Dec
 - Pillows, curtains, table linens, lamp shades