Wool & Flow

WATER-SAVING WOOL SYSTEM

Process experiments and How-Tos

LE TEXTILE LAB

FABRICADEMY
textile and technology academy

MARTINA MURONI

WASHING: SUINT FERMENTATION

Suint fermentation is a wool washing method that uses the natural grease (lanolin) and potassium salts (suint) already present in raw wool to create a mild alkaline washing bath through controlled fermentation. It is considered a pre-industrial scouring method.

PROCESS

BATH PREPARATION

- Submerge wool in water
- Wool-to-water ratio: 1:5–1:10
- Temperature: 30–40°C (or as warm as possible in winter)

FERMENTATION PHASE

- Monitor temperature and pH
  - Duration: 24–72 h
  - Wool submerged, no agitation
  - pH target: 8–9

Suint dissolves into the water, microorganisms initiate fermentation, the bath becomes slightly alkaline.

RINSING & DRYING

- Gentle warm water rinses
- Air-dry in ventilated area

Avoid sudden temperature changes and agitation.

LANOLIN RECOVERY

[EXTRA]

- Let the water sit overnight to allow the lanolin to float to the surface.
- Collect the floating lanolin for future use (e.g., soap)
- Pass the water through a mesh to remove solids
- Reuse the bath for washing

MATERIAL

- 500g* unwashed wool
- Stainless steel bain-marie
- Thermometer
- pH strips
- Protective gloves

*or less as running a small test

LIMITATIONS

Seasonal Constraints
The process works best in spring and summer, when the temperature is warmer.

Wool Characteristics
Freshly shorn wool is most effective. This project uses wool shorn in October, which may affect fermentation.

Odor & Indoor Space
Microbial activity and lanolin may produce strong odors. Experiments are planned indoors due to winter conditions.

Regulatory & Hygiene Considerations
No official regulations exists.The substances are not hazardous but protective measures are used.

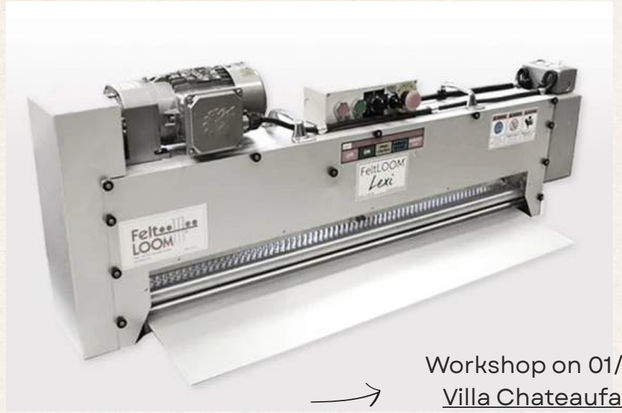
FELTING: WET AND NEEDLE FELTING

Exploratory track: observation of existing machines and reflection on low-tech* interventions for repetitive movements (fabrication TBC)

MACHINES AND TOOLS TO EXPLORE

NEEDLE FELTING

FELTLOOM



Credit

Workshop on 01/15 at Villa Chateaufavier

FELTING GUN

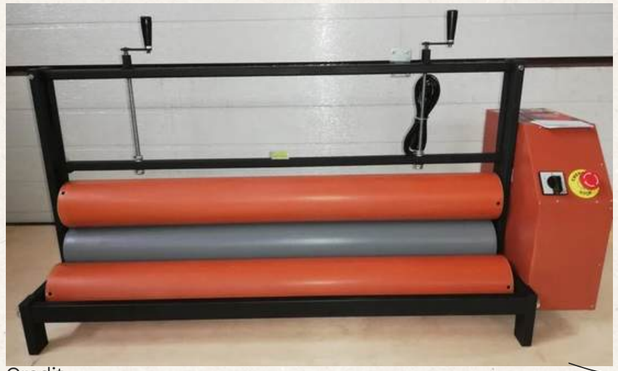
Available at Le Textile Lab

Facilitated movement:

Repetitive up-and-down needle punching, usually performed manually for long periods.

WET FELTING

ROLLING MACHINE (WET FELTING)



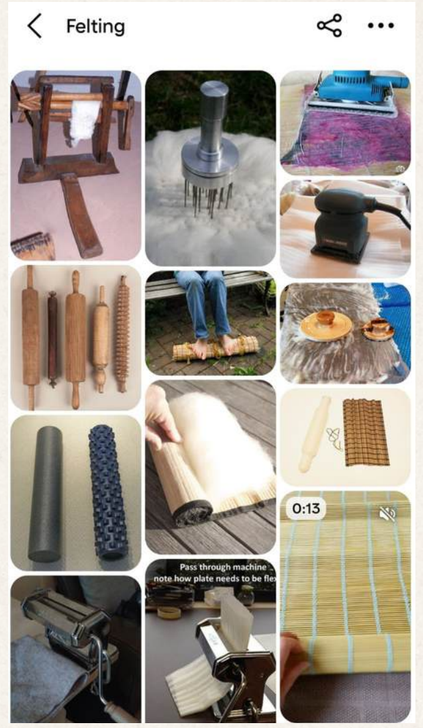
Credit

Purchased by Le Textile Lab, awaiting delivery

Facilitated movement:

Continuous rolling and pressure applied to wool layers during the felting process.

LOW-TECH IDEAS



My pinterest board

- Workshop to share practices
- Using kitchen tools for rolling
- Prototyping multi-needles holder
- Fisio-roller/bamboo mats as aids
- Shifting effort from hands to feet

*Principles: useful, accessible, sustainable (Source)

BIOMATERIALS

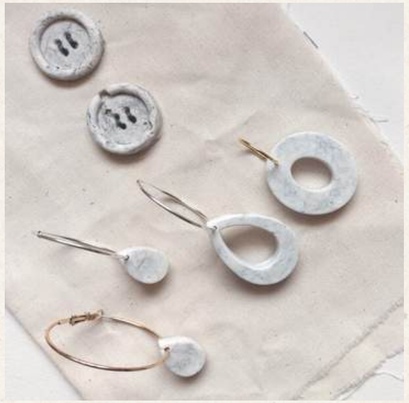
Following experiments conducted during Phase 1, this part focuses on partially explored or unsuccessful directions, aiming to develop more rigid composites using natural binders. The focus is not on object production, but on defining material behaviors and potential applications.

EXPERIMENTS ALREADY CONDUCTED WITH UNWASHED WOOL

+ mycelium

+ agar

+ starch



+ resine

+ alginate and calcium chloride

WHAT'S NEXT

Wool-based sheets

Ingredients (1 sheet, A4 size):

- 10 g wool fibers
- 30–50 ml water
- 0.2–0.3 g CMC (1–3% of wool weight)
- Optionals: 5 g recycled paper pulp, 0.1 g gum arabic (for extra binding)

Recipe in Appendix.

Potential applications: packaging, layers or substrates.

Wool + natural bio-resins

Ingredients (1 square, 10x10cm):

- 10–12 g wool fibers (carded or pulled)
- 20 g Reslin® oil
- 10 g Reslin® activator (follow 2:1 oil:activator ratio)
- Optional: natural pigment powder or mineral fillers (mica, crushed shells, coffee grounds)

Recipe in Appendix.
Test with different wool: resin ratios to test stiffness.

Potential applications: design, accessories, furniture.

BIOCHROMIC

Tests explore low-water coloration using tannin-rich ingredients and contact-based methods. Micro-baths and minimal moisture techniques were applied to washed, unwashed, and wet-felted wool to observe differences in color absorption and fiber response.

TEST 01 · TANNIN MICRO-BATH

- **Ingredients**: black tea/coffee **Water**: 100–150 ml hot water
- **Fiber**: washed wool, unwashed wool, wet-felted wool
- **Process**: fibers immersed in a concentrated micro-bath for 30–60 min
- **Notes**: no mordant used; dark tannins suitable for beige fibers

TEST 02 · TURMERIC MICRO-BATH

- **Ingredients**: turmeric powder
- **Water**: 100 ml hot water
- **Fiber**: washed and unwashed wool
- **Process**: short immersion in a low-water bath for 20–40 min
- **Notes**: turmeric does not require mordant. Strong pigment with minimal water use.

TEST 03 · CONTACT DYEING (ECO-PRINT INSPIRED)

- **Ingredients:** leaves, tea, turmeric, spices
- **Water:** minimal (sprayed or lightly poured)
- **Fiber:** damp wool and wet-felted samples
- **Process:** ingredients placed in direct contact with fibers, then wrapped and left to rest
- **Notes:** generates organic marks and uneven chromatic patterns

TEST 04 · TANNIN + IRON REACTION

- **Ingredients:** oak/black tea+ iron solution
- **Water:** tannin micro-bath + minimal iron spray
- **Fiber:** washed wool, unwashed wool, wet-felted wool
- **Process:** fibers first exposed to tannins, then treated with iron solution to trigger chromatic reaction
- **Notes:** oak tannins shift from beige to green, tea to grey.

TOOLS

- Containers (small bowls or jars)
- Spray bottle (for minimal water application)
- Handling Tools (spoons, gloves)
- Wrapping material (string, fabric for contact dyeing)
- hot water kettle

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Appendix: Detailed receips

Wool-based sheets

Ingredients (per ~1 sheet, A4 size):

- 10 g wool fibers (carded or pulled)
- 30–50 ml water (adjust for consistency)
- 0.2–0.3 g CMC (1–3% of wool weight)
- Optional: 5 g recycled paper pulp (even shredded toilet paper works!)
- Optional: 0.1 g gum arabic (for extra binding / surface smoothness)

Equipment:
Bowl, spatula, sieve or fine mesh, weights or press, absorbent paper.

Procedure:

1. Dissolve CMC (and gum arabic if using) in warm water.
2. Mix wool fibers (and paper pulp if using) into the solution until evenly distributed.
3. Pour or spread mixture onto sieve or fine mesh, gently leveling to desired thickness (3 mm).
4. Press lightly to remove excess water.
5. Let sheet dry flat (overnight or longer depending on thickness).
6. Peel off, optionally press again or lightly sand edges for finish.

Notes / Tips:
Paper pulp increases mechanical strength.
CMC helps fibers stick; but too much gummy sheet.
Gum arabic smooths the surface and improves fiber cohesion.

Wool + Reslin® (Biodegradable & safe) square

Ingredients (per ~1 square):

- 10–12 g wool fibers (carded or pulled)
- 20 g Reslin® oil
- 10 g Reslin® activator (follow 2:1 oil:activator ratio)
- Optional: natural pigment powder or mineral fillers (mica, crushed shells, coffee grounds)

Equipment:

- Small flat mold (~10×10 cm)
- Spatula or brush
- Silicone mat/parchment paper
- Oven (60–80 °C) for curing
- Scale for accurate measurement

Procedure:

1. Mix Reslin® oil and activator in 2:1 ratio until homogeneous.
2. Spread wool fibers evenly in the mold (~8–12 mm thickness).
3. Pour the resin mixture over fibers, working with a spatula or brush to ensure full penetration.
4. Add pigments or fillers if desired.
5. Cover with parchment paper or silicone mat; press lightly to consolidate.
6. Bake in oven at ~60 °C for ~60 minutes, or until fully cured.
7. Remove from mold; optionally trim or sand edges.

- Thickness & resin ratio:
  - 40:60 wool:resin → softer, more textured but still rigid
  - 50:50 → balanced rigidity and fiber visibility
  - 60:40 → denser, smoother surface, more resin-dominated
- Experiment: make several small squares with slightly different wool:resin ratios to find the optimal balance of texture.