

Knitted Coffee Filters

creating a reusable 'one-size-fits-all' coffee filter

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TT 591 - Warp and Weft Knitting
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The Problem

- Many types of coffee brewing methods
- Each method has its own filter
- Not the most sustainable option

We aim to create a reusable 'one-size-fits-all' coffee filter

Current Products



Reusable filter



Unbleached filter



Bleached filter

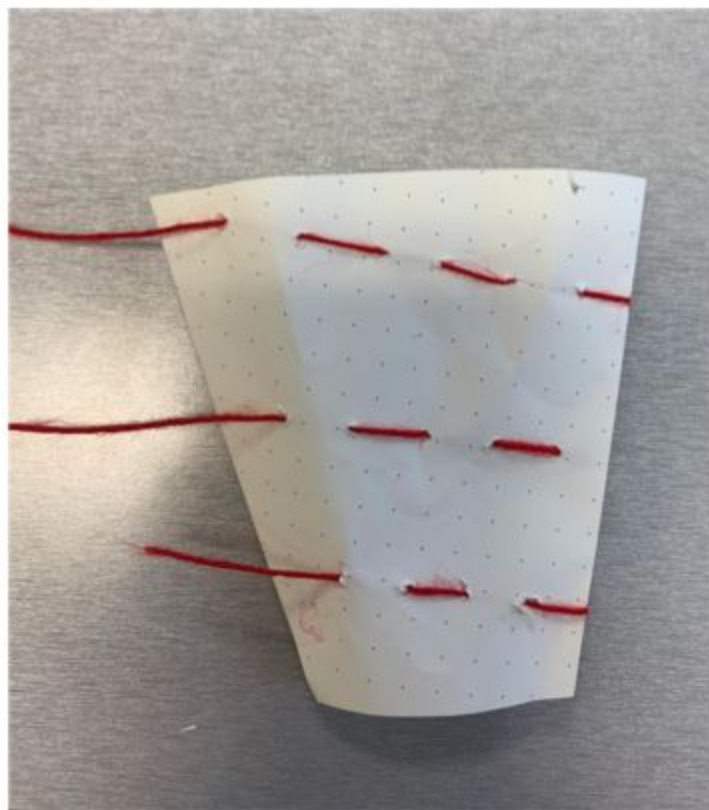
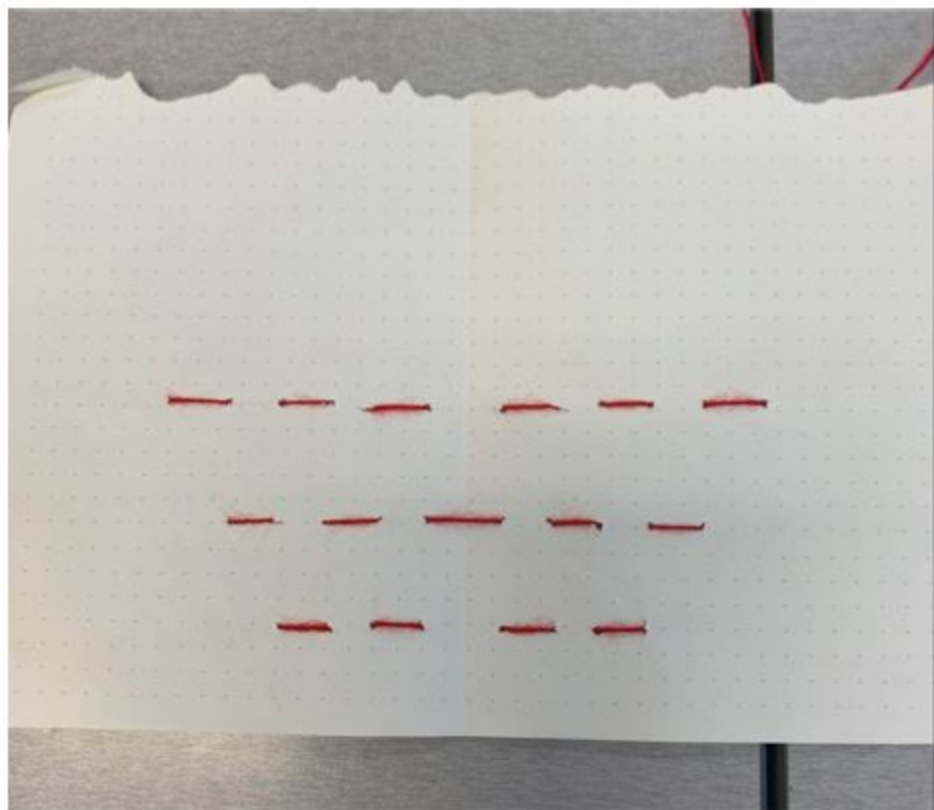
Solution

- **Universal coffee filter**
 - Adjustable for every brewing method

- **Reusable**
 - Washable
 - Durable



Paper Prototypes



Requirements

Yarn

- “Run-off” of yarn we were using
- Cleaning of yarn (degradation? runoff? shrinkage?)

Brewing

- Flow of water through the filter
 - Slower flow makes better coffee
- Ability to fit different machines
 - Manipulate the shape as-needed for different apparatus

Intended Specifications

- Yarn: monofilament
 - High melting point
 - No staining
 - No fiber/particle “runoff”
- Structure: Ribbing, tucks for relief, other



The First Prototype

Machine: Dubied V-Bed
Gauge: 7

Content: 100% Cotton
Structure: Jersey

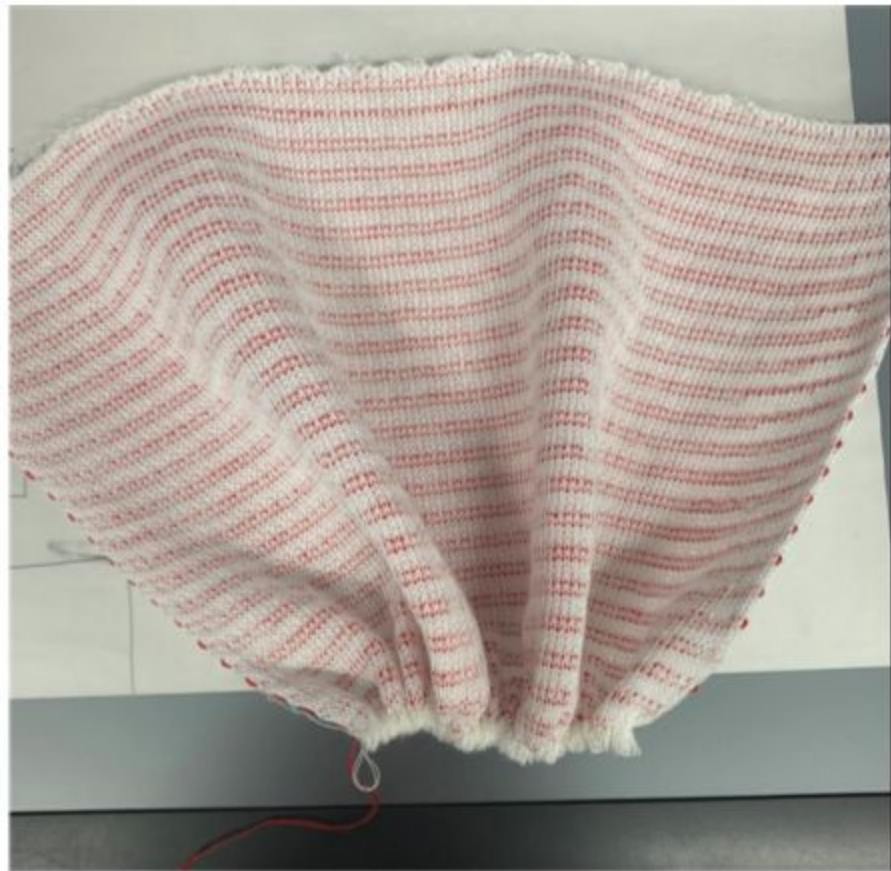


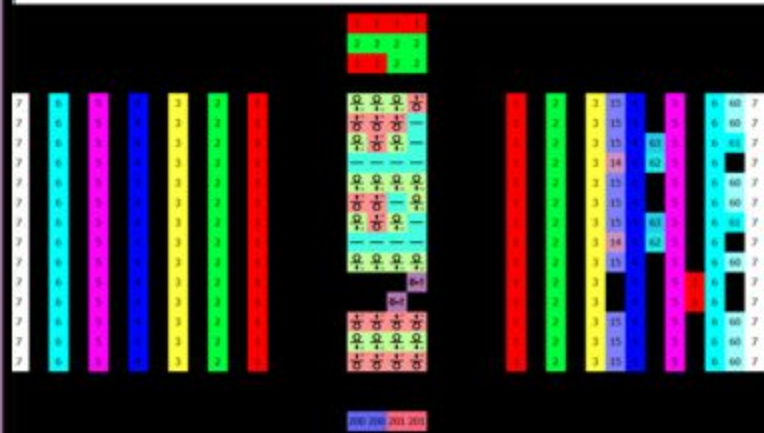
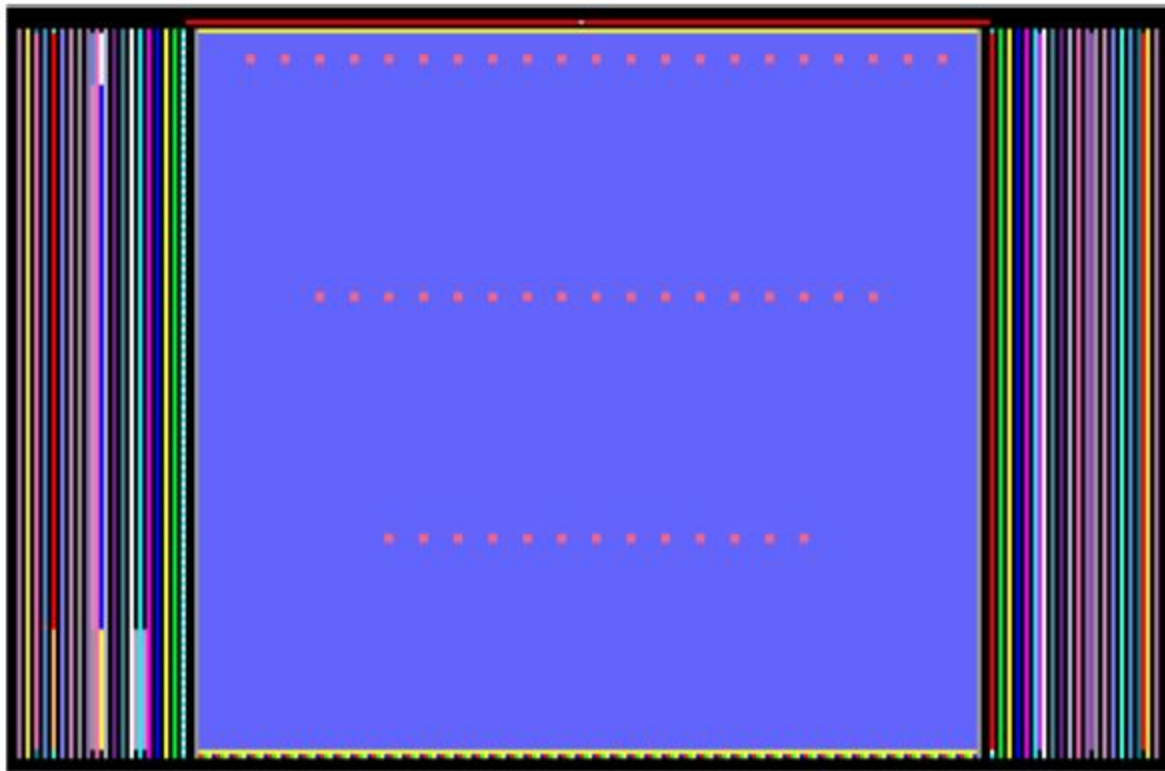
first challenge: create inlay structure

Inlay Development

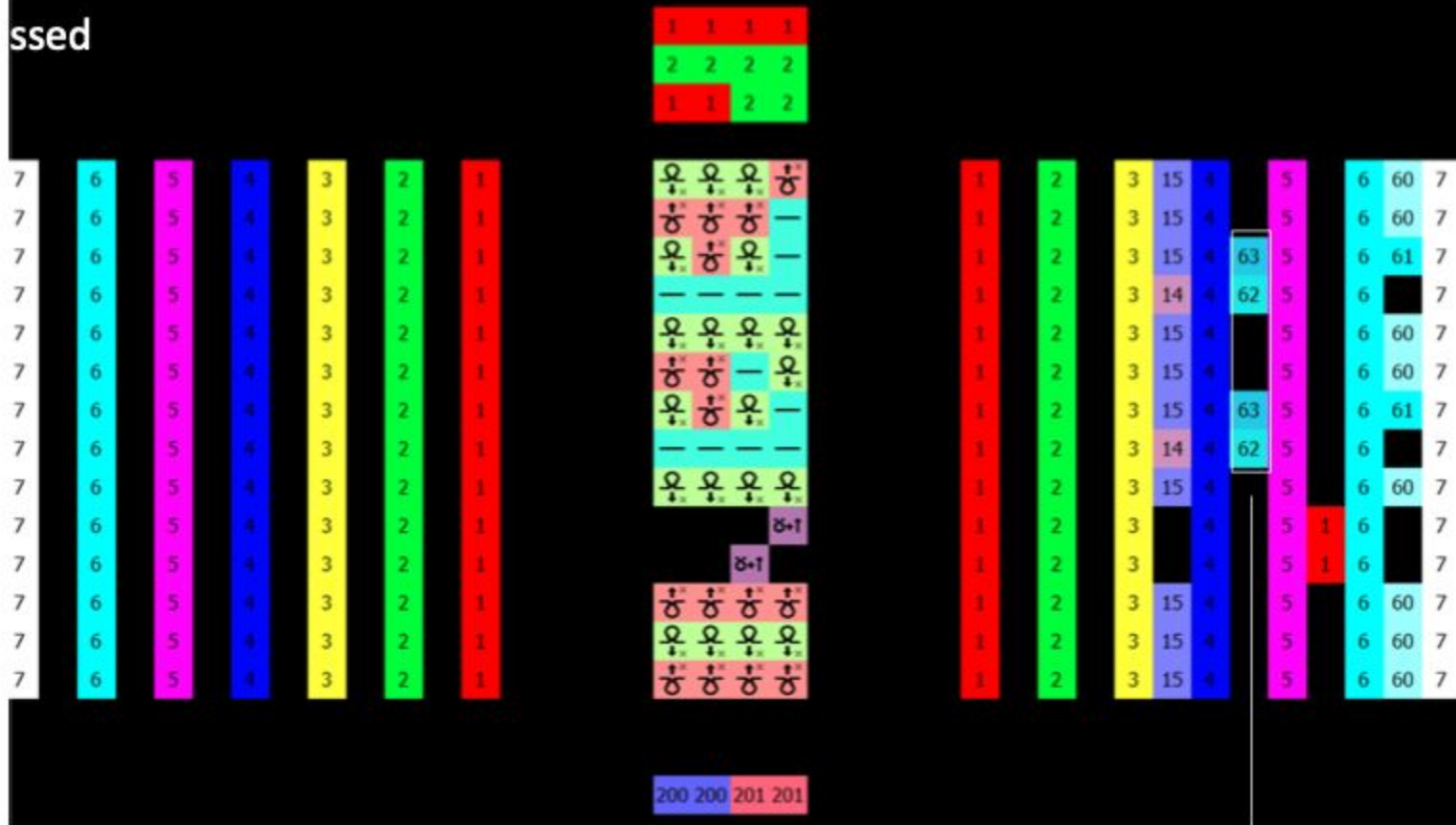
Machine: SRY
Gauge: 14

Content: 100% Cotton
Structure: Interlock





ssed



systems 62 and 63 control the yarn "covering" the inlay in one traverse
 62 - inlay (color 16) 63 - every other f/b needle covering the inlay

Inlay Development

Machine: SRY
Gauge: 14

Content: 100% Cotton
Structure: Interlock



Yarn eliminated in areas where not needed.



Product folded in half and sewn on bottom.

The First Brew - Product Testing

Machine: pour-over



The First Brew - Product Testing

Coffee Machine: pour-over
Gauge: 15

Content: 100% Cotton
Structure: Interlock



Takeaways:

- need to create tube
- rate of water flow is too fast to 'brew' the coffee

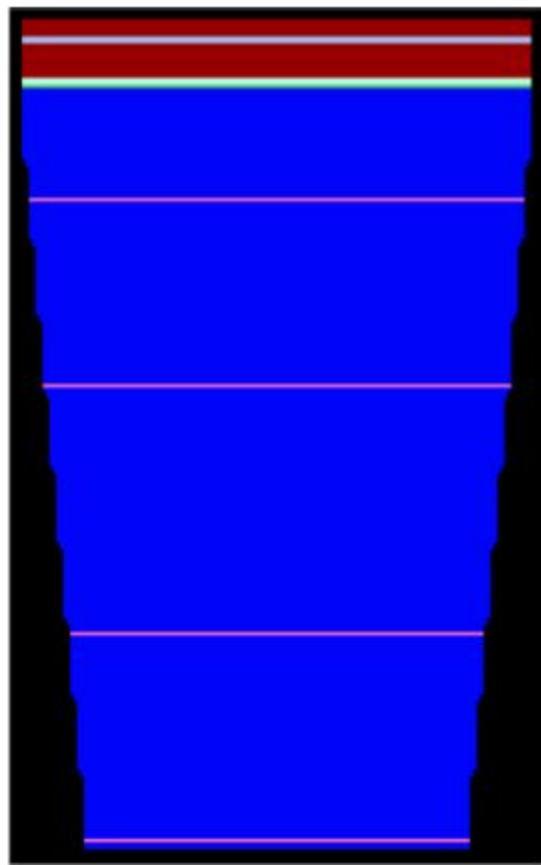
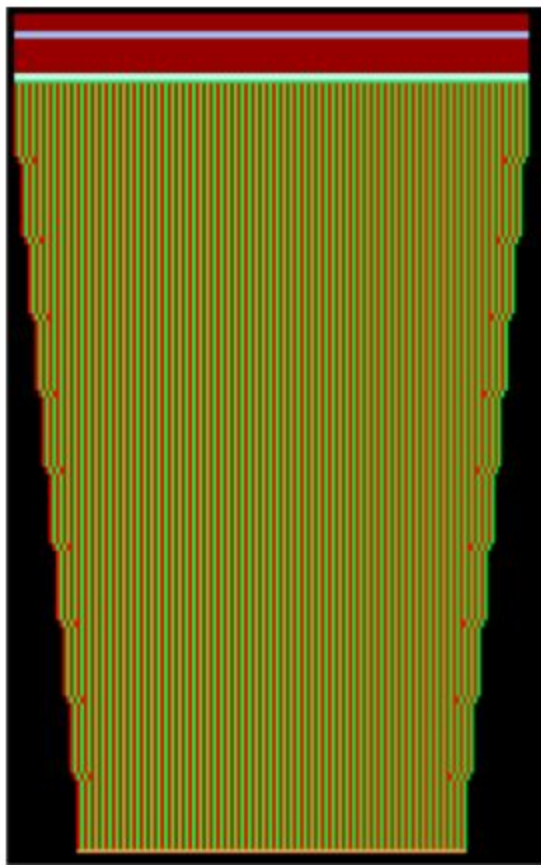
next challenge: create a tube

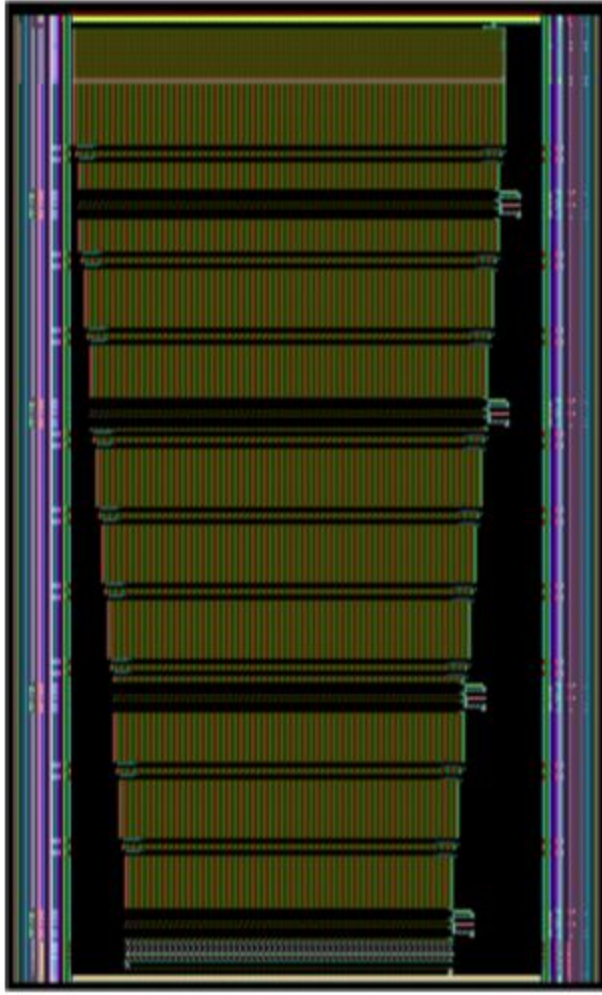
Machine: SWG N2 061

Gauge: 14

Content: 100% Cotton

Structure: Rib





The First Brew - Product Testing

Machine: SWG N2 061

Gauge: 15

Content: PET/Spandex

Structure: Rib



The First Brew - Product Testing

Machine: SWG N2 061

Gauge: 15

Content: PET/Spandex

Structure: Rib

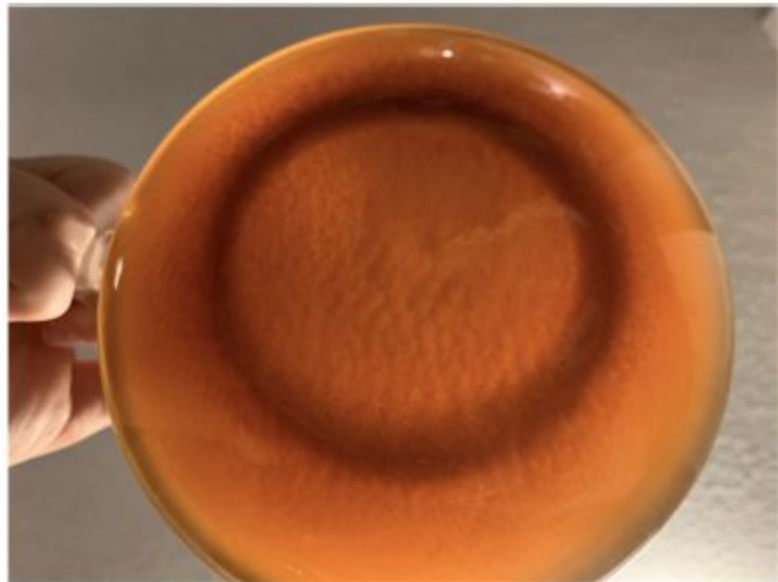


Takeaways:

- need to create closed bottom
- rate of water flow is better w/ rib structure and yarn content

The First Brew - Product Testing

Machine: pour-over

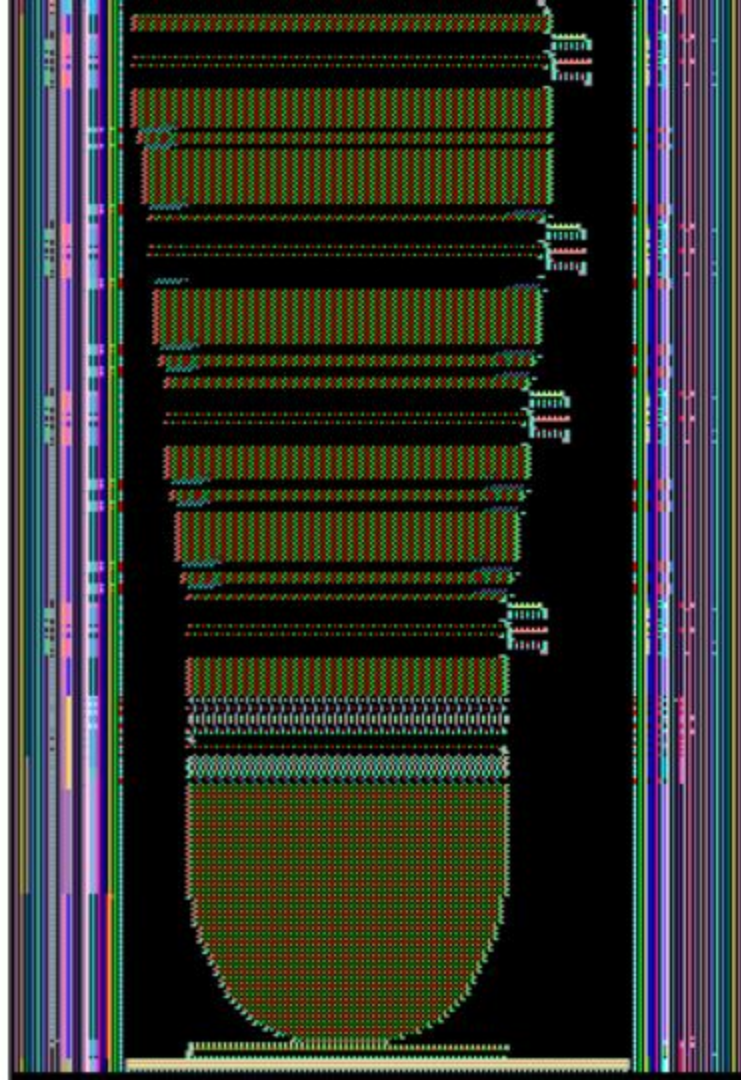
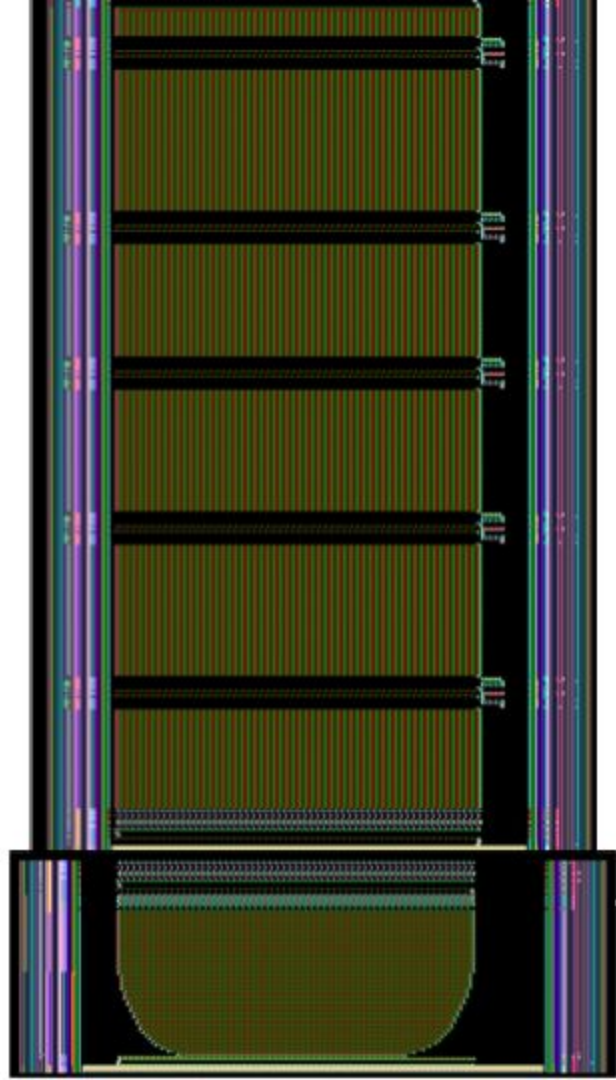


White Cotton Filter Sediment



Purple Synthetic Filter Sediment

next challenge: close bottom



Outcome (size and tapering experiments)

Machine: SWG N2 061

Gauge: 15

Content: PET/Spandex

Structure: Rib



1

2

3

The Second Brew - Large Filter

Machine: Chemex and Pour-Over



Large Filter on **Chemex**



Large Filter on **Pour Over**

The Second Brew - Large Filter (Chemex)



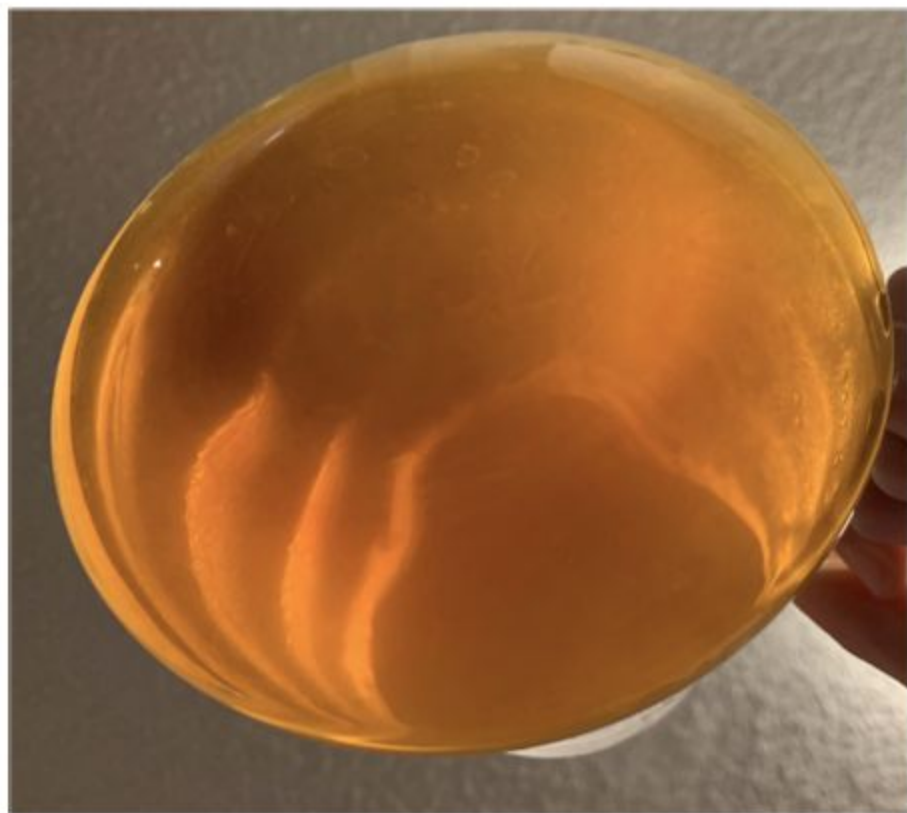
The Second Brew - Large Filter



The Second Brew - Large Filter Sediment



Large Filter on Chemex



Large Filter on Pour Over

The Second Brew - Small Filter



Small Filter on Pour Over



Small Filter on Drip Coffee Machine

The Second Brew - Small Filter



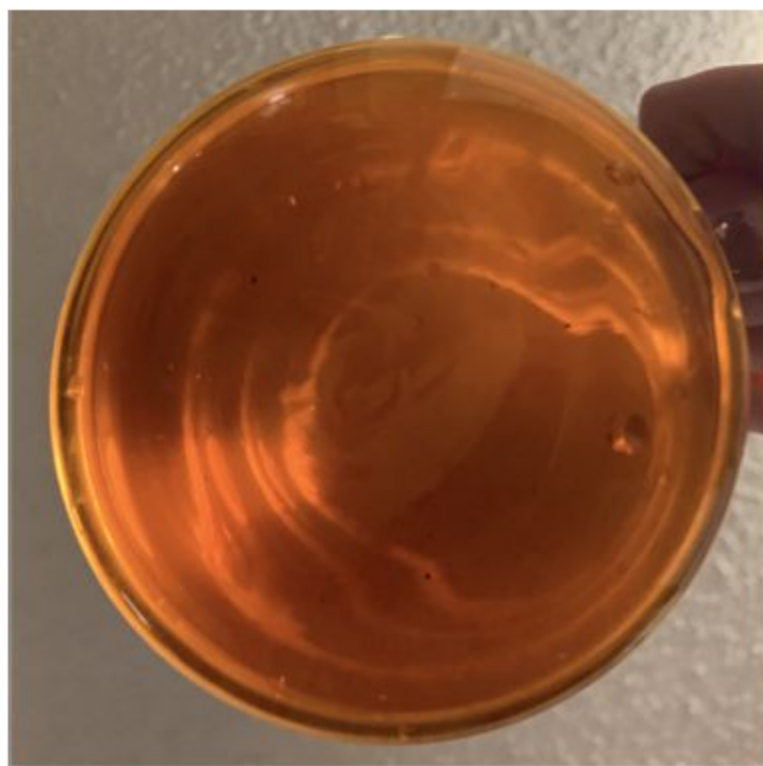
The Second Brew - Small Filter



The Second Brew - Small Filter Sediment



Small Filter on Pour Over



Small Filter on Coffee Maker

Actual Specifications (to-date)

- Yarn: PET/Spandex Blend
 - Low degree of staining
 - No fiber/particle “runoff”
- Structure(s)
 - Ribbing and Jersey (at bottom)

Future Tasks



- Create a more dense structure
 - Adjust stitch length and/or change structure
 - 18 Gauge SIR
 - Interlock with tight stitch length
 - Purpose: slow rate of water flow to obtain better brew quality
- Future uses
 - Cold brew
 - Creating a “to-go” coffee filter (fold up and transportable)