

# Maker Machines

## What's Popular with Patrons in 2023

**Cathy DeCampi, Emerging Technology & Teen Services Librarian**

Haddonfield Public Library

**Tanya Finney Estrada, Director**

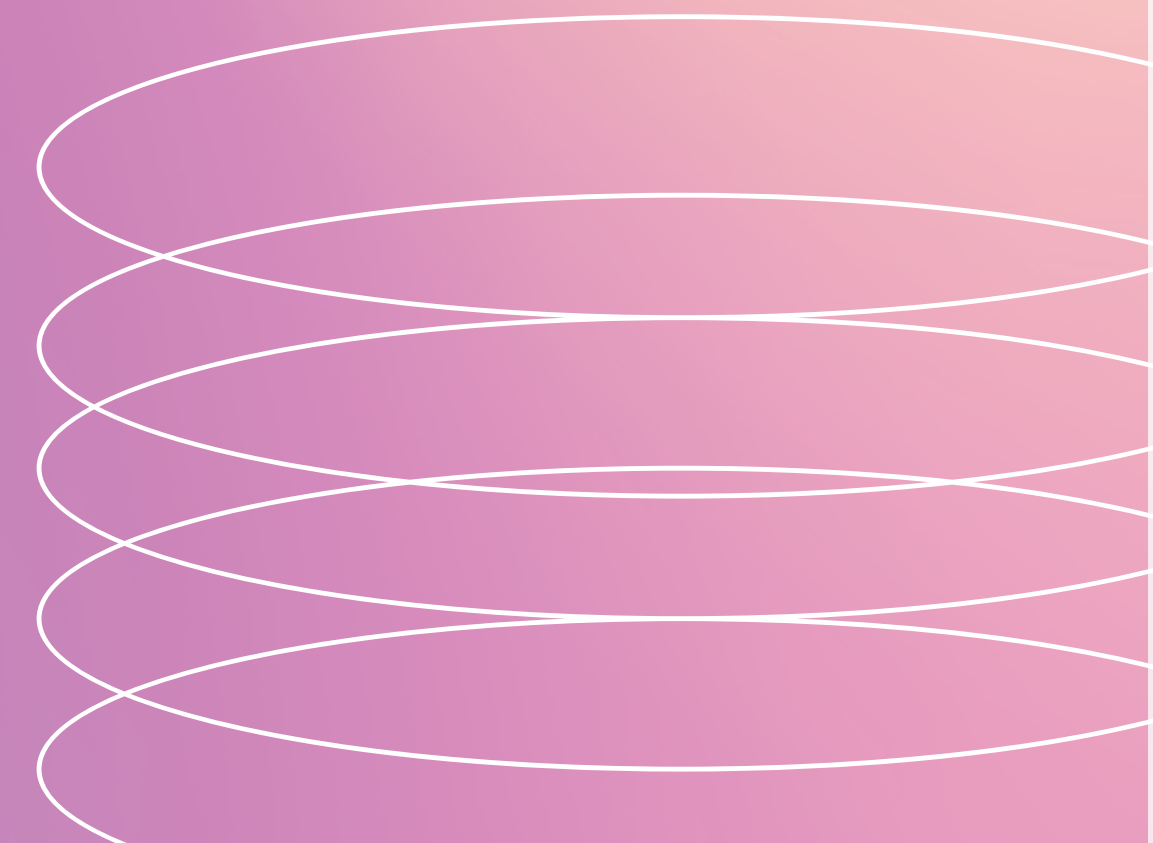
Pennsauken Free Public Library

**Sandy Janosik, Makerspace Instructional Librarian**

Hunterdon County Library System

**Sarah Pike, Teen Librarian**

Hunterdon County Library System





# Glowforge Pro

Cuts and engraves:

- wood
- acrylic
- slate
- natural leather
- paper
- fabric
- rubber
- cork
- and more!

# Why do people love it the Glowforge?



## It's User Friendly

No advanced design or technology skills are required to get started with the Glowforge.



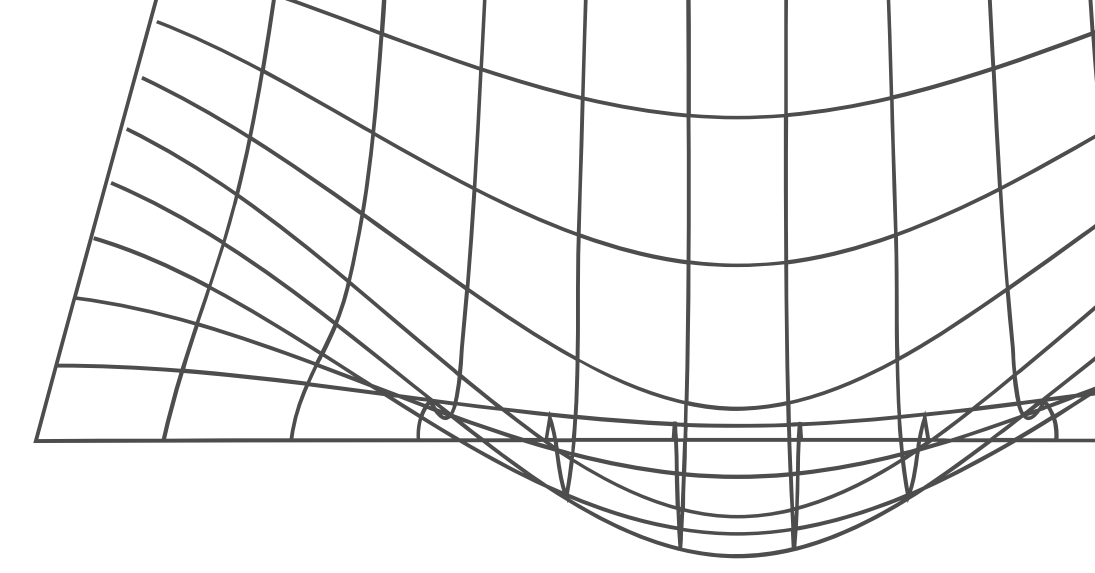
## Designs are everywhere

With a premium account, users can access thousands of designs. Even more can be found on sites like Etsy, Creativemarket, and Designbundles for just a few dollars.



## It's fast

Where a 3D printer can take hours or days to complete a design, a laser cutter takes only minutes to make a cut.



# Before you buy

Some things to think about

01

## It's loud & smelly

The machine has to vent either through a window or an air filter. Both are loud and can be disruptive. The filter captures most of the smell but some will always be left over on the material and in the bed.

02

## The wifi is temperamental

The Glowforge requires a wifi connection to start a print. There is no ethernet option and the machine's wifi antenna isn't strong. Assess the strength of the wifi in the room that will house the Glowforge.

03

## Safety

Fire is real. Our machine caught fire due to a patron using the wrong settings but failing to keep the machine clean can also be a fire hazard.

# Policies & Procedures

## **CERTIFICATION**

Anyone 13 and older can get certified to use the machine by completing a series of training activities on Beanstack and a short sample project with our emerging tech staff. This certification allows them to use the Glowforge without staff supervision.

## **MATERIALS**

The library sells Proofgrade (Glowforge brand) material at face value but patrons may bring in their own materials. We also have a large supply of scraps that people can use for free.

## **PROGRAMS**

Each month we hold at least one program where patrons make a Glowforge project. We found the benefits to be:

- People get to see an example of what the Glowforge can make.
- Patrons who aren't comfortable using the machine alone are happy to attend guided programs.
- We cover the cost of materials during programs, so patrons who aren't sure if they want to try it have nothing to lose.



# Infusible Pen & Markers with Cricut Mug and Heat Press



# Why Infusible Pens and Markers

Also called Sublimation Pens and Markers

## 01

### **Wide Applications**

Wide Applications: Good for drawing any design directly on copy paper. Easy to heat transfer the drawing on your sublimation blanks, such as tumbler, mugs, water bottles, T-shirts, coasters and so on.

## 02

### **Easy to Use**

The pens and markers are easy to use and only require laser copy paper to apply to any blank. No peeling or cracking iron on or vinyl. No layering.

## 03

### **Cost Affective**

You can buy infusible pens and markers anywhere, and they don't have to be Cricut brand just as long as they are sublimation ink. You don't have to purchase sublimation paper; you can use laser copy paper. The pens and markers can be used without a Cricut Machine, but you would need a heat or mug press. Get more uses than infusible sheets.



# Wide Application



# How to Use the Infusible Markers and Pens

## For Hand Painting



1. unleash your creativity



2. Wrap sublimation mug



3. Heat transfer



4. Get unique mug

## For Cutting Machine



1. Place and draw



2. Place on top



3. Heat transfer



4. Get unique T-shirt

# Practical Tips

## **MATERIALS**

You can use the pens and markers on t-shirts, tote bags, round and square coasters, and mugs.

Generally, all sublimation processes need a polyester or poly-coated base material. This is one of the limitations when using infusible pens and markers.

You can not draw directly on the base material. The pens and markers are designed to be transferred using laser copy paper.

It is recommended to use laser copy paper vs. regular copy paper. Laser paper is designed to withstand higher heat temperatures and will give you a better transfer.

## **PROGRAM PLANNING**

When planning your program, determine the age group. For younger kids, hand drawing is fun because it gives them a chance to be creative. You can try freehand or the Cricut machine for older teens and adults. Also, think about ways to save time, such as having the template already cut if you are doing hand drawing. Have artwork samples for those who have difficulty coming up with a design or drawing. Themes (e.g., summer) are also good, meaning everyone uses the same image or selects from a few designs.

## **POLICIES & PROCEDURE**

When hosting a program that requires patrons/customers to work with machines that can cause bodily harm, such as a heat press, it's strongly advised to have written safety procedures and a signed Waiver, Release of Liability, and Hold Harmless Agreement.



# Hunterdon County Library Makerspaces





# Maker Machines

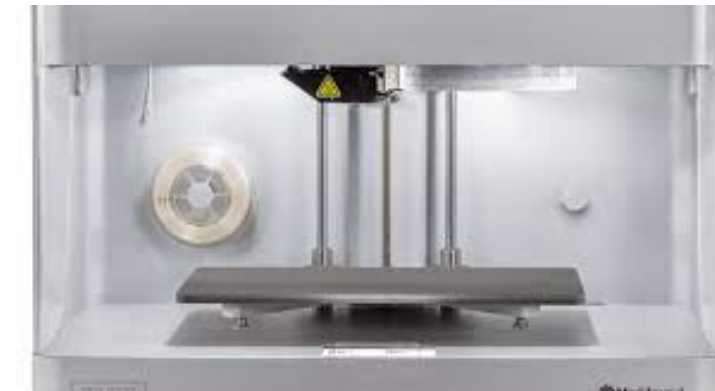
## Direct To Garment Printer



## Sublimation Printer



## 3D Printers



## Boss & Glowforge Lasers



## Ceramics



## Sewing, Serging & Embroidery





# Makerspace Libguide

- Equipment Libguides
- Equipment Reservations
- Policies
- Open Hours
- Events
- Badging class schedule & quizzes
- Contains everything mentioned in this presentation and a lot more





# Maker Machines: Direct to Garment Printing



Epson F2100 \$10,000



## T-Shirt making in its glory

Beautiful, full color, detailed images. Easy to design on Canva and import into Epson Garment Creator Software



Lawson Silver Jet \$3,000



## Non-white shirts need pre-treatment

Lawson pre-treatment machine sprays glue like solution on shirt that white ink & colors lay on top of



Geo Knight DK20S \$2000



## Heatpress sets the ink

Heat press at 350 to set the ink



## Consumables Cost

Ink Charge for patrons:  
White t-shirt ink \$5  
Non-white t-shirt ink \$8



# Maker Machines: Sublimation Printing



Epson F570 \$2500

Heat press Geo Knight DK20S \$2000



**Use any graphic design program to create a PNG or PDF file**

We teach using Canva



**Print file on the sub printer**

The printer uses special paper and ink



**Heatpress the paper to material design is being transferred to**

Under heat and pressure the ink turns to a gas that is permanently embedded in the material



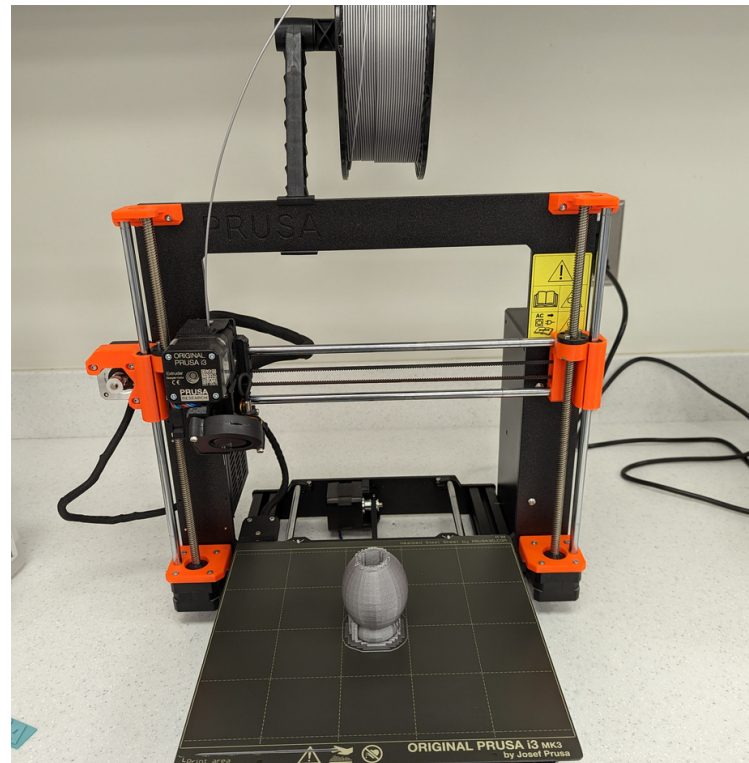
**Material receiving ink**

Must be sublimation ready – polyester works, cotton does not. Many sublimation ready materials are available





# Maker Machines: 3D Printers



Prusa MK3S+ \$1,100



## Prusa Printers – 3D printing workhorse

PLA available in multiple colors for \$.30/gram  
Intro to 3D printing taught using Tinkercad



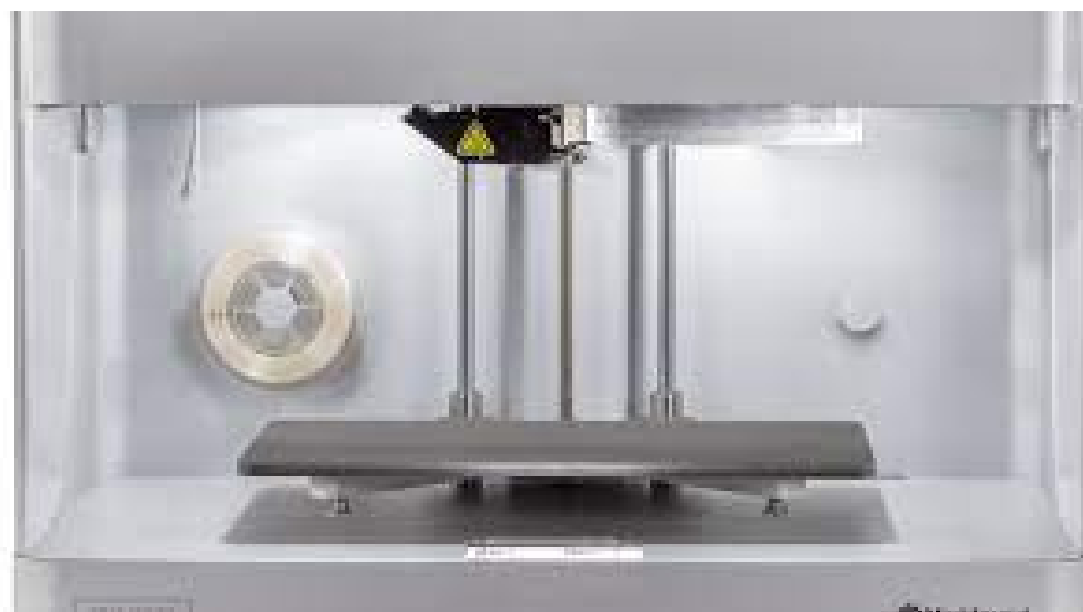
## Markforged Carbon Fiber Printer

Onyx Carbon Fiber at \$.30/gram. Strong, light-weight, water and chemical resistant material



## HCL Printing Service

STL files uploaded to Airtable form on 3D printing Libguide. Airtable notifies Makerspace staff when a print is uploaded. Library slices and prints after patron approves cost. Very popular.



Markforged Onyx One \$6500



# Maker Machines: Boss Laser



Boss 1630 \$5600

Filtrabox \$4000



**Use any graphic design program to create SVG file**

We teach using Inkscape, a free graphic design program that can be downloaded by patrons



**Twice as fast as the Glowforge with larger build area**



**Fume collection or vent to outside is needed**



**Fire risk, fumes and it is big**

Enforce laser safe materials

Training on settings

Maintain machine by cleaning



**Air pump and fume collection system are noisy**



# Maker Machines: Ceramics



Studio Starter Pack : \$6500



## **Bailey Studio Starter Package**

Skutt is another very popular brand



## **Ceramics is chemistry**

Seek help from local potters and online forums  
Kiln firing cone for bisque and glaze fire must match clay and glazes



## **Ceramics is a process**

Requires shelving as projects dry and additional staff work or multiple visits by patrons to complete projects.



## **Additional Equipment: shelving, glaze, tools, slab roller (optional)**



## **Vent to outside**



## **Kiln required dedicated 60 amp breaker, direct wire, 240 volt**

# Embroidery Machine Brother SE 1900



\$1,000

- 2 in 1 sewing and embroidery
- max 5" x 7" embroidery area
- 240 different stitches
- 138 customizable preloaded designs
  - import more via USB

<https://hclibrary.us/sewing/embroidery>

# Why the Embroidery Machine?

## Multipurpose

You can sew or embroider with the machine.

Use it for embroidery appointments or combine with other sewing machines for a sewing program.

Use it on any height table – no foot pedal required for embroidery or sewing.



## Customizeable

Preloaded designs can be customized by:

- text
- color
- size

Purchase premade files by designers online.

Create own designs using free software Ink/Stitch and Inkscape.



[inkstitch.org](http://inkstitch.org)

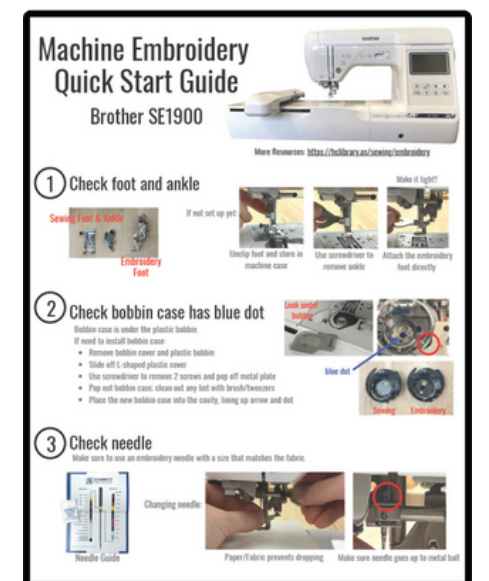
## Easy

The machine does all the hard work for you!

What to learn:

- how to thread the machine
- how to switch between sewing & embroidery
- what fabric & stabilizer to use (guides online)

Follow the manual's quick start guide (or make your own) for a visual refresher.



# Embroidery Machine FYI

## Time

Most designs take 10+ minutes to stitch, with additional time needed for set up and changing colors.

Some designs can take 50+ minutes to stitch.

The embroidery mode is better for **appointment use** or **small group** programs.



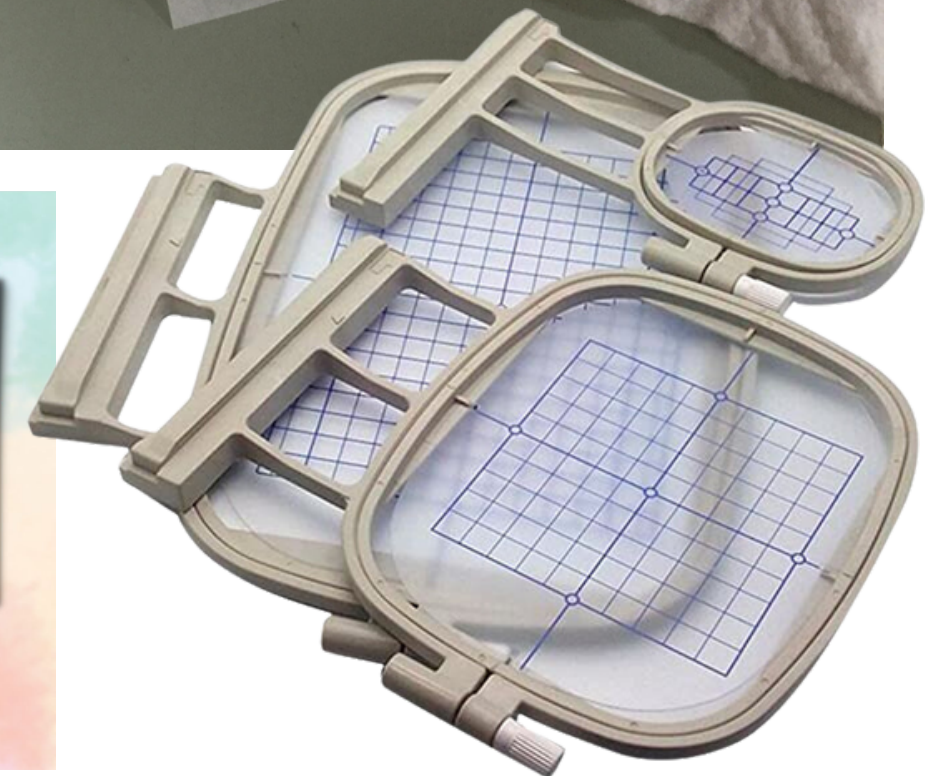
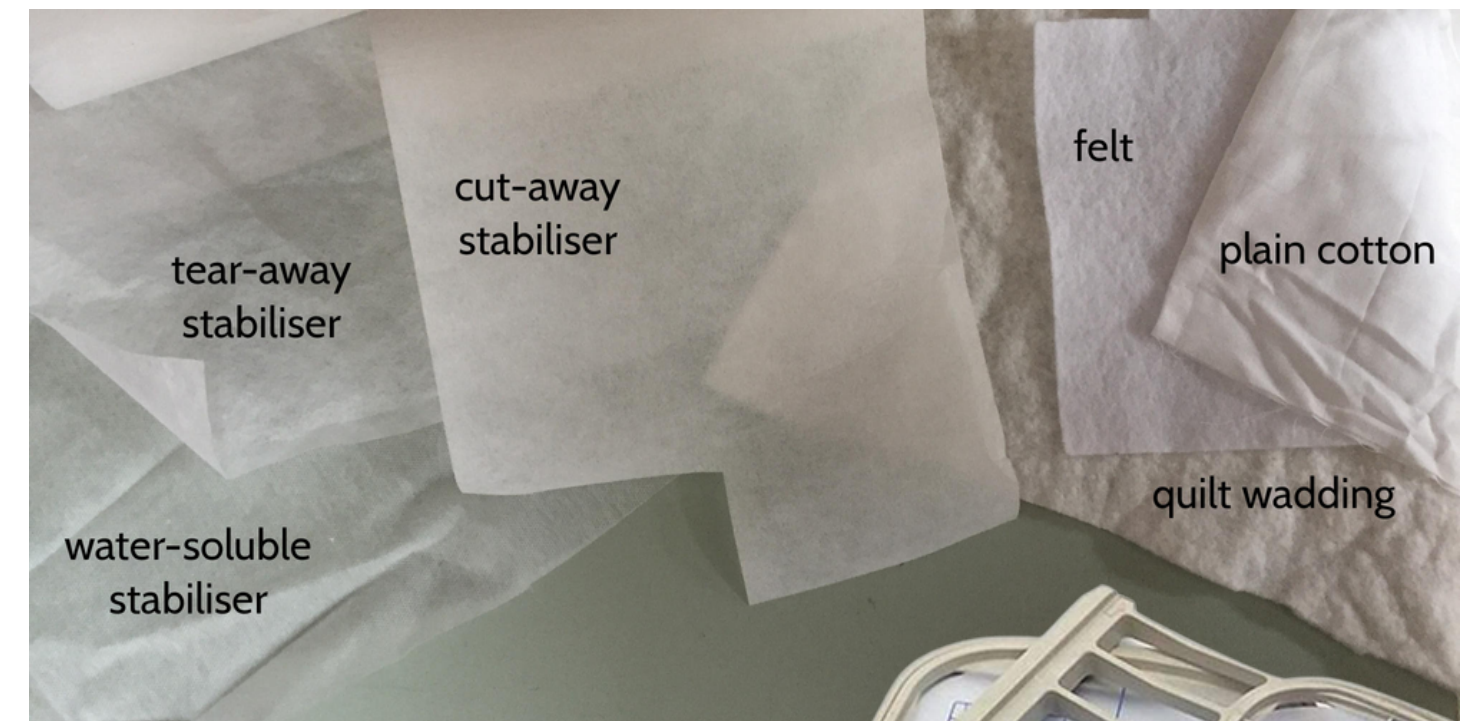
## Materials

Need a **large color range** of machine embroidery thread.

Need **different types of stabilizer** depending on the fabric type and/or embroidery design.

Larger hoops **use more stabilizer**, even if your design is small.

Only **use machine embroidery needles** for embroidery. They should be replaced every few projects. Needle size depends on the fabric.



# Past & Future Programs

- NJMD Bandanas Embroidery
- Japanese Bookmark Embroidery
- Custom Bookmark Embroidery
- Sushi Tote Bags Sewing
- Drawstring Bags Sewing, Embroidery
- Bucket Hats Sewing, Serger
- Button-Up Shirts Sewing, Serger
- Pencil Case Sewing, Embroidery
- Custom Napkins Embroidery, Serger
- Reusable Gift Bags Embroidery, Serger
- and more!



Singer Heavy Duty 4452



Baby Lock Victory Serger

