

# MAKERSPACE MODEL INSTRUCTIONS

## Arizona Simulation Technology & Education Center

### Basic Single Layer Suture Pad

#### 1. OVERVIEW

This model has four layers: a bottom silicone layer, a power mesh layer, a foam layer, and a top silicone layer. This model is suitable for practicing simple interrupted and uninterrupted sutures and can be easily modified to bleed from the laceration.

#### 2. EQUIPMENT AND MATERIALS

- Chemical fume hood<sup>1</sup>
- Mold
- Ease Release
- Paint brush
- Dragon Skin Silicone A (1 L)
- Dragon Skin Silicone B (1 L)
- Silc Pig pigment (amount variable)
- Mixing containers (2)
- 2' x 2' square power mesh
- 3.5" square memory foam pads ¼" thick (16)
- Bar clamps (4)
- 3D printer with Polylactic Acid (PLA) filament<sup>2</sup>
- Baby powder
- Brush
- Scalpel
- *Simulated blood – optional*

<sup>1</sup>If you do not have a chemical fume hood, perform these steps in a well-ventilated area.

<sup>2</sup> These materials are required for making the suture pad holder from a 3D printer.

#### 3. MOLD

The first step is to prepare the mold. You will need a 4 by 4-inch container with an open top and closed bottom for this model. We have constructed a grid to prepare 16 models at once.

#### MATERIALS

- Mold
- Ease Release
- Paint brush

Under a chemical fume hood, spray the mold with Ease Release. Use the paint brush to ensure the surfaces are completely covered. Allow this to dry for at least 5 minutes. The model is now ready to for the silicone to be poured.

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### 4. SILICONE PAD

The second step is to prepare the silicone mixture, which will simulate the soft tissue. The working time of the silicone mixture, once A and B are combined, is 5 minutes.

#### MATERIALS

- Mold
- Dragon Skin Silicone A (300 mL)
- Dragon Skin Silicone B (300 mL)
- Silc Pig pigment (amount variable)
- Mixing containers
- Baby powder
- Brush
- 2' x 2' Power mesh square
- 3.5" square memory foam pads ¼" thick (16)
- *Simulated blood - optional*

Before mixing the silicone, cut a 2' by 2' square of power mesh and set aside. Also, cut 16 foam pads that are 3.5" by 3.5" and set aside.

The amount of silicone mixture may vary depending on the size of the mold. For our mold, pour 300 mL of silicone A into a mixing container. Pour 300 mL of silicone B into a separate mixing container. Add Silc Pig pigment to silicone B and mix until desired color is reached. Mix silicone A and silicone B together. Pour the mixture into the mold. Lay down the power mesh, followed by the grid.

Bar clamp the grid to the mold to ensure no silicone leaks out. Place a memory foam pad in each square. Allow the silicone to cure for 30 minutes.

*Optional: To make a trainer which bleeds from the laceration, soak the memory foam pads in simulated blood prior to placing in the silicone.*

### 5. TOP SILICONE LAYER

The third step is to prepare the top silicone layer. The working time of the silicone mixture, once A and B are combined, is 5 minutes.

#### MATERIALS

- Mold base
- Dragon Skin Silicone A (600 mL)
- Dragon Skin Silicone B (600 mL)
- Silc Pig pigment (amount variable)
- Mixing containers
- Baby powder
- Brush

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Pour 600 mL of silicone A into a mixing container. Pour 600 mL of silicone B into a separate mixing container. Add Silc Pig pigment to silicone B and mix until desired color is reached. Mix silicone A and silicone B together. Pour the mixture into the mold base.

Allow the silicone to cure for 30 minutes. Remove the grid and cut the excess silicone to make individual suture pads. After removing the suture pads, brush them with baby powder using a paint brush.

### 6. SUTURE PAD HOLDER AND LACERATION

The fourth step is to 3D print the suture pad holder.

#### *MATERIALS*

- 3D printer with PLA filament
- Complete silicone suture pad
- Scalpel

We use the Ultimaker S7 Pro Bundle 3D printer with PLA filament. The print bed needs to be at least 10 by 10 inches. We have an .stl file available for use to print the suture pad holder. It takes 4 hours to print.

After 3D printing is completed, assemble the suture pad by placing it in between the two parts of the suture pad holder. Use a scalpel to create the desired laceration.

### 7. CONCLUSION

This model provides the opportunity to practice suture skills and wound closure using simple suture techniques. The model can be stored at room temperature.

### 8. REUSING THE MODEL

The silicone model can be reused by removing sutures until the silicone layer has deteriorated. The suture pad holders can be reused with new silicone models.

Use the link below for **Advanced Multilayer Suture Pad Instructions**:

<https://astec.arizona.edu/sites/default/files/2026-05/Advanced-Multilayer-Suture-Pad-Instructions.pdf>