



Structo[®]
Empowering Dental with 3D

Structo[®] Face Shield Assembly

User Manual

April 2020

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Disclaimer

Important: The Face Shield has not undergone the same regulatory approval process as standard PPE. The Face Shield was designed by an expedited verification process as a response to the COVID-19 pandemic. Structo believes that the Face Shield is “better than not having anything” but give no representation or warranty as to the effectiveness or design of the Face Shield. The Face Shield is meant for single-use and verification for disinfection processes is ongoing.

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It is intended that the Structo Face Shield (the “Face Shield”) as an alternative when professional Personal Protective Equipment (“PPE”) is unavailable. It is hoped that a Face Shield will cover the wearers face and thereby provide some protection from potentially infectious particles, dust, and hazardous chemicals.

Topics:

- [Printing overview](#)
- [Printing requirements](#)

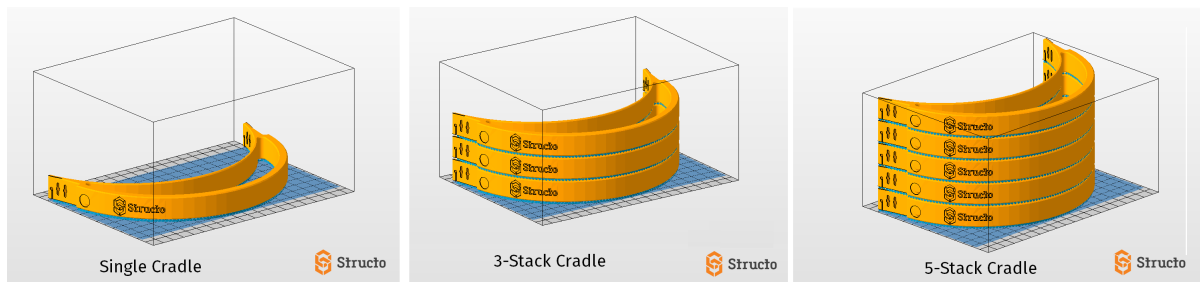
This section explains how to prepare for the printing of Face Shield cradles (cast) and the overview of the printing process.

Printing overview


The following steps provide an overview of the printing process for cradles.

1. Extract the ZIP file containing the SPJ/STL files.
2. Upload the files onto the printer.
 - For DentaForm, use SPJ files.
 - For any other 3D printer, use the STL file.

You can either print a single cradle, 3-stack, or 5-stack cradle at a time. The following figure illustrates the three SPJ files available for printing.



3. Ensure that you set the values for the properties as described in the following table.

Property	Value
Resolution	100um
Motion Profile	FaceShield ¹  Note: To obtain the FaceShield motion profile, contact Structo Support at cs@structo3d.com .
Resin Profile	DF-Model (19001 V01) A

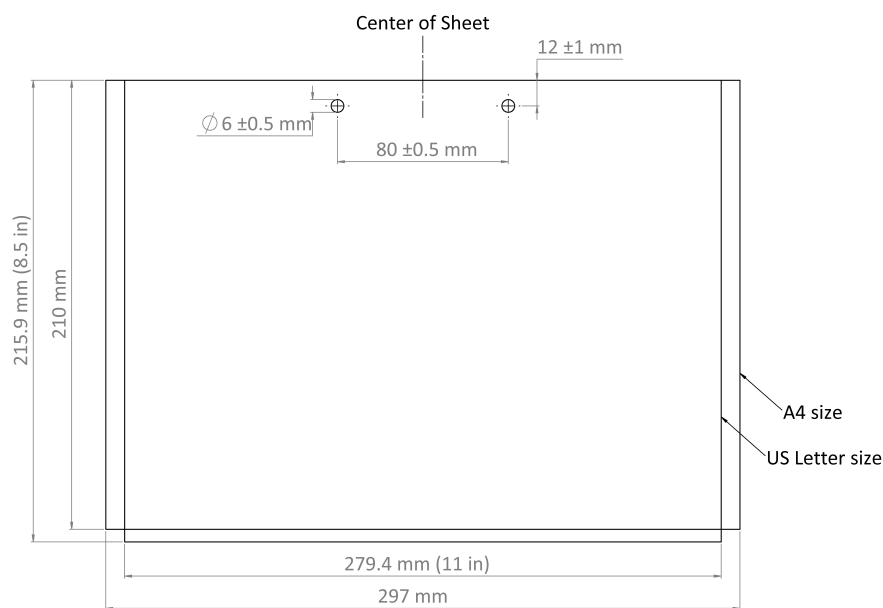
4. Print the cradles.
5. Remove the prints from the build platform.
6. Wash the cradles with isopropyl alcohol (IPA) twice for 5 minutes each time.
7. Cure the printed cradles for 15 minutes.

¹ Table 1: FaceShield Motion Profile

Face Shields per Print	Layers	Volume [cm ³]	Print Duration	Prints per day
1	200	39.92	0:37:48	11.2
3	599	119.58	1:49:00	5.0
5	1000	199.63	2:59:00	3.5

Printing requirements

Ensure that your infrastructure meets the requirements summarized in the following table.

Requirement	Guidelines
SPJ/STL files	Download the ZIP file containing the SPJ/STL files available here .
Transparent plastic sheet	<p>Ensure that the transparent sheet meets the following recommendations of specifications.</p> <ul style="list-style-type: none"> A standard US letter-sized transparency or report-cover for the shield, 2-10mil (0.002-0.01", 0.05-0.25mm) thickness. Acceptable alternative materials include clear PETG, PMMA, or Mylar in the same thicknesses cut to 8.5" x 11" (215.9mm x 279.4mm). A4 sized plastic sheets of similar material and thickness specifications can also fit the mask.
Hole puncher	<p>Use a standard 2-hole hole puncher or refer to the following dimensions.</p>  <p>The diagram illustrates the dimensions for a transparent plastic sheet used for printing. It shows two sizes: A4 and US Letter. The A4 size has a width of 297 mm and a height of 215.9 mm (8.5 in). The US Letter size has a width of 279.4 mm (11 in) and a height of 210 mm. Two punch holes are shown, each with a diameter of $\phi 6 \pm 0.5$ mm. The punch holes are spaced 80 mm apart and are 12 mm from the top edge. The center of the sheet is marked with a dashed line.</p>
Palette knife	Use a palette knife or anything that is hard and sharp to perform the same action.

Perform these steps to assemble Face Shields.

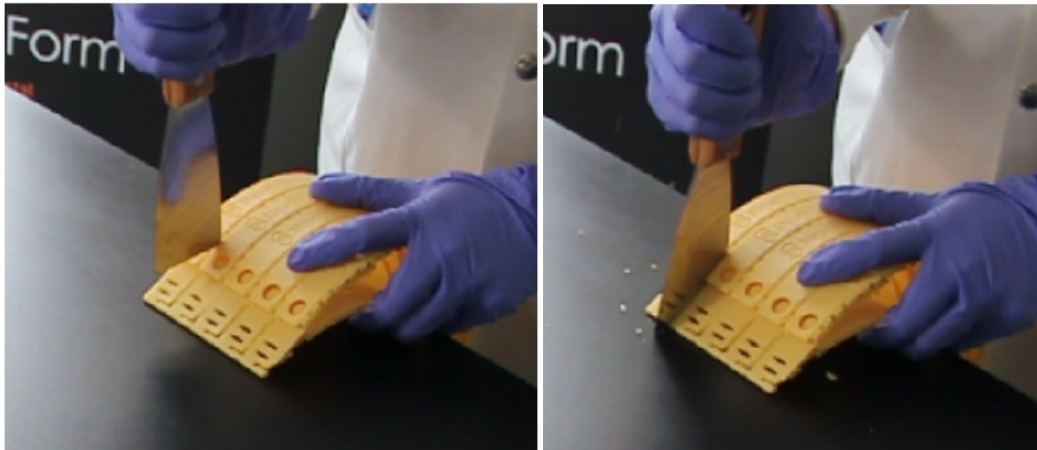
Before you begin

- Ensure that you are in a clean disinfected environment to assemble face shields.
- Wash your hands thoroughly with soap and water.

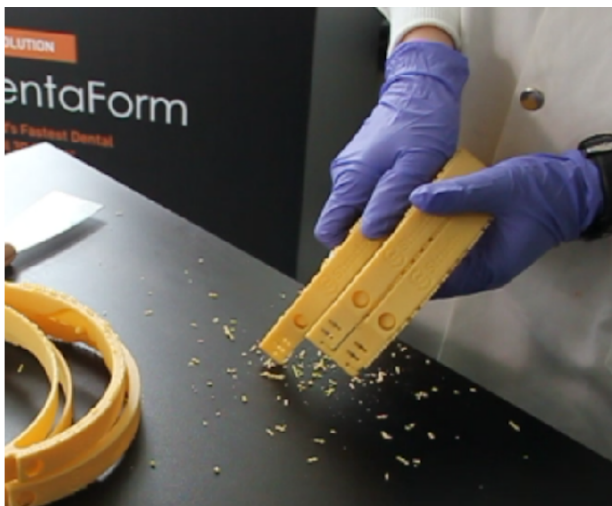
Procedure

1. Cut the cradles with a palette knife.

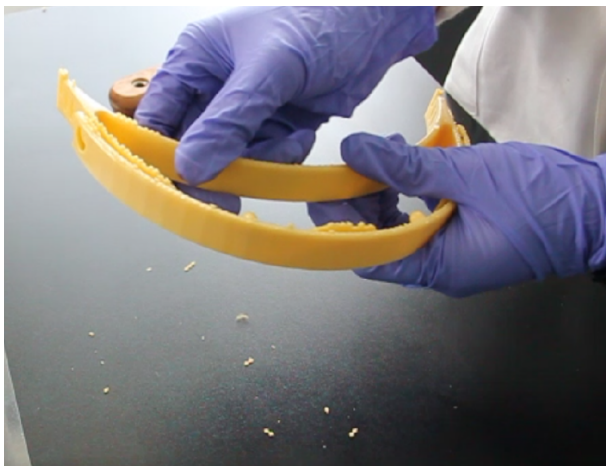
- If you have printed a single cradle, go to [step 2](#).
- If you have printed a 3-stack, or 5-stack cradle, follow these steps.
 - a. From the edge, cut along the line until 1/3 the length of the cradle.



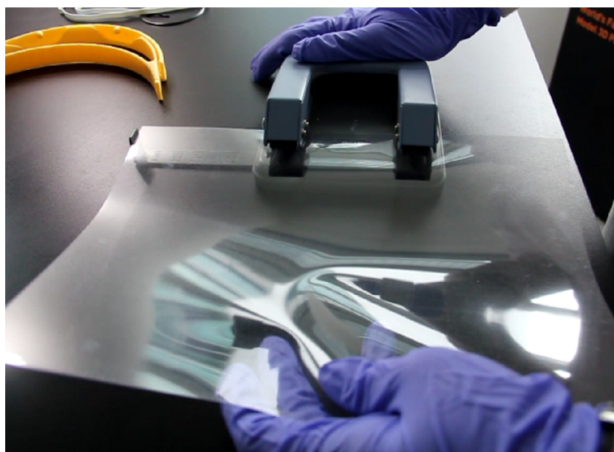
b. Separate the cradles carefully.



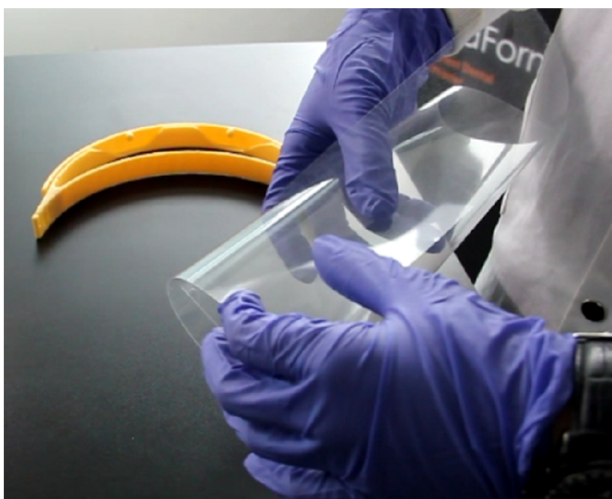
2. Peel off most of the support structure with your hands and the rest with a palette knife.



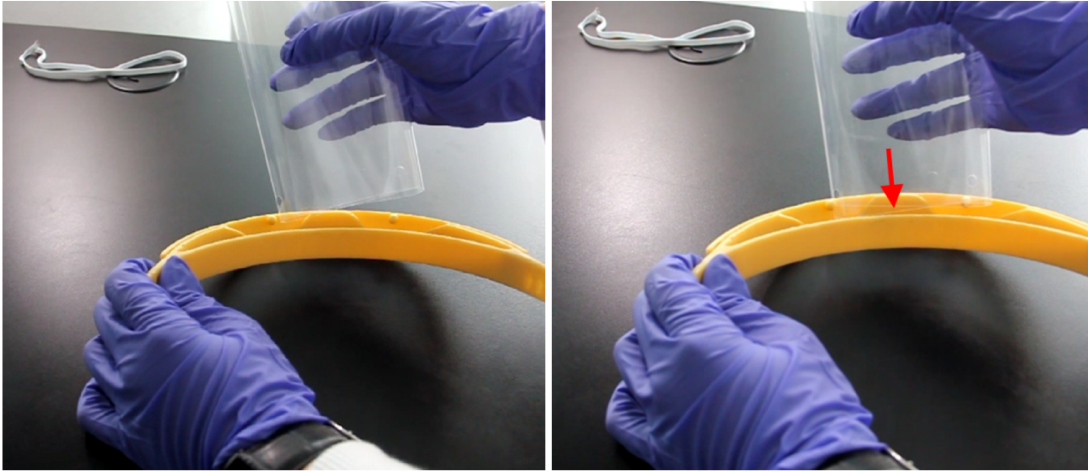
3. Align the center arrow of the hole puncher with the center of the plastic shield and punch holes.



4. Fold the shield slightly, into three portions.



5. Hold the cradle in your non-dominant hand, and then slot shield in between the gap at the center of the cradle fully.

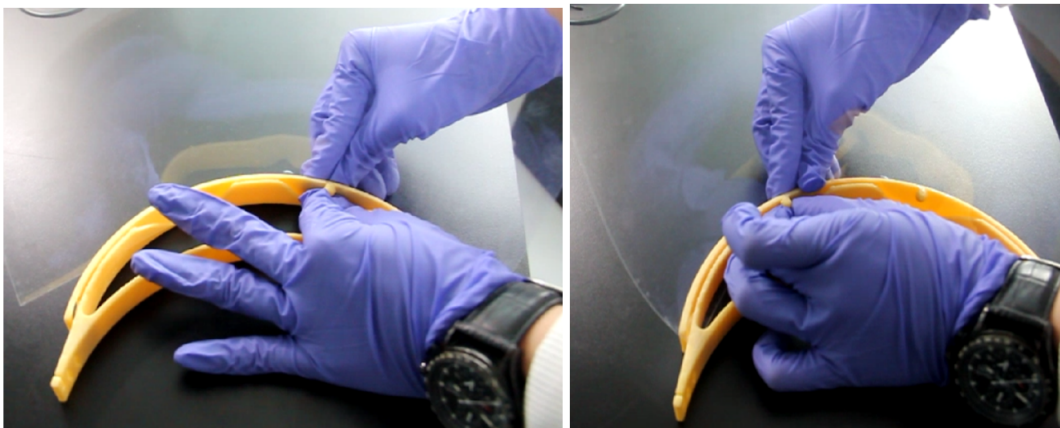


6. Release the plastic shield from the fold.

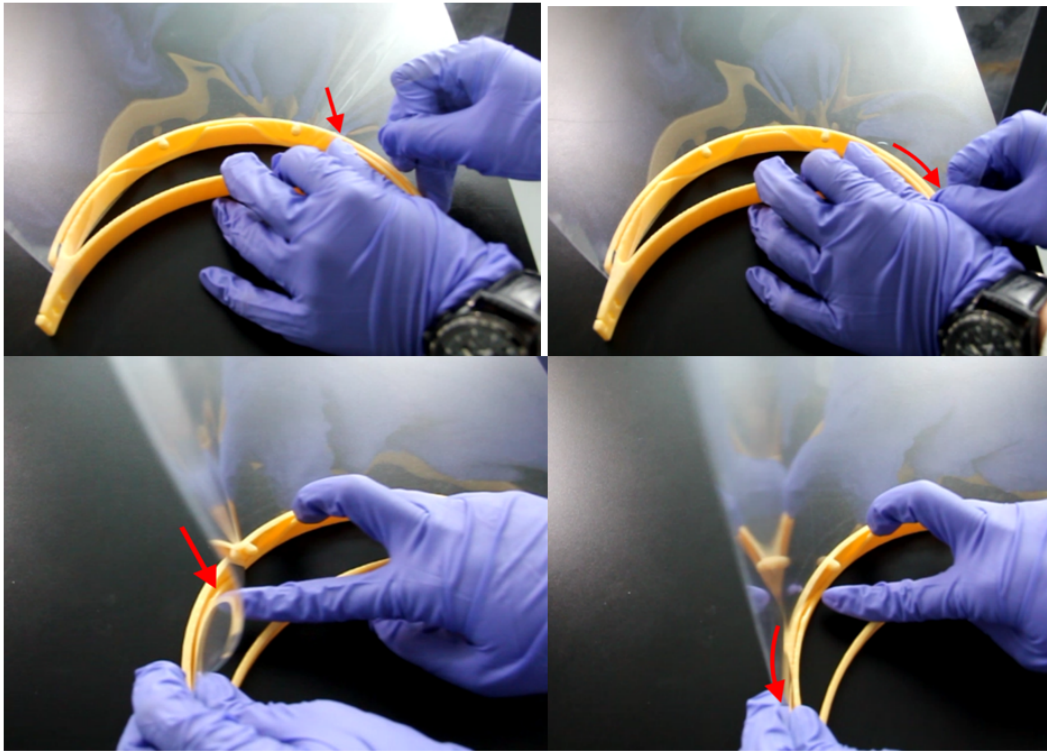


7. Secure holes on the shield to the cradle pegs.

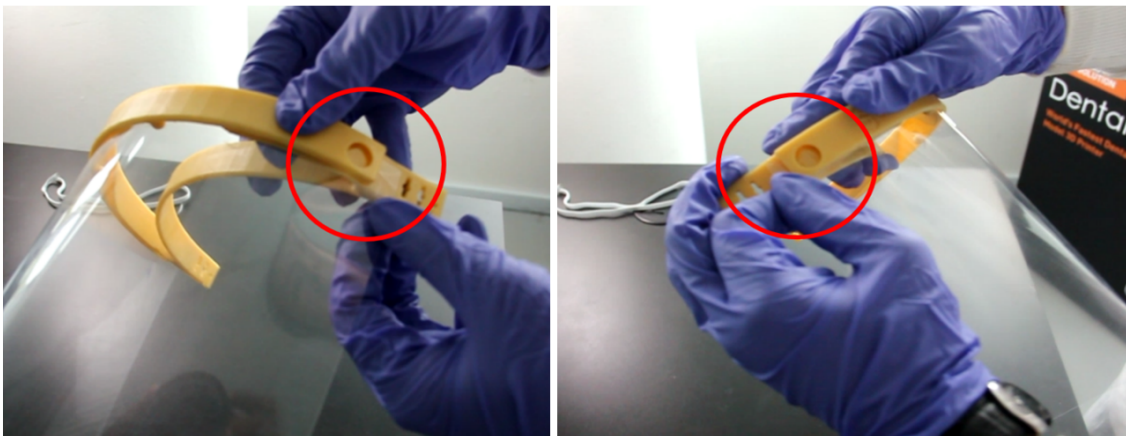
The shield should snap in gently.



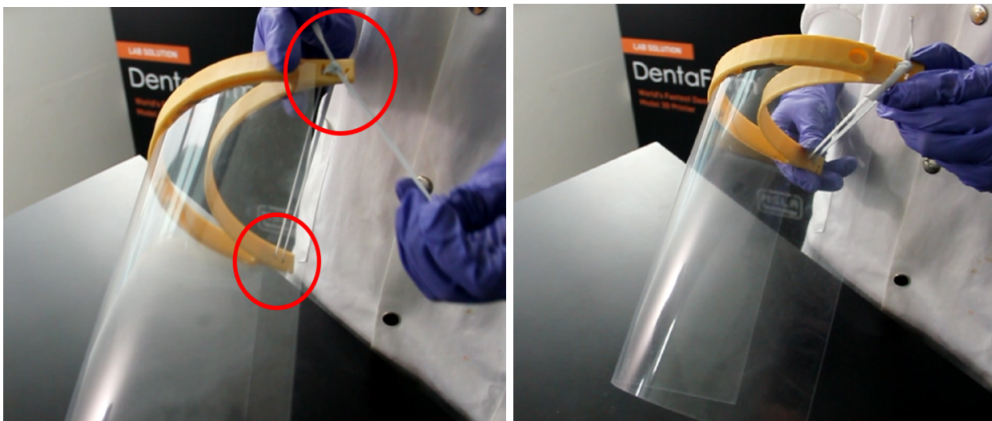
8. Hold the cradle in your non-dominant hand, secure the shield, and then pull the remaining shield across the gap between cradle on both sides.



- 9.** Ensure that the plastic shield is tucked properly in the round button features at the two ends of the cradle. Gently pull the edges of the shield outwards and upwards.



- 10.** Use the slots at the ends of the cradle to attach any elastic band or string of your preference.



- 11.** Gently shake the Face Shield to ensure that the shield is properly secure and will not fall off during use.

- For additional information resources visit the [Structo Knowledge Base](#).
- The Face Shield assembly video is available at: [Face Shield Assembly Video](#).