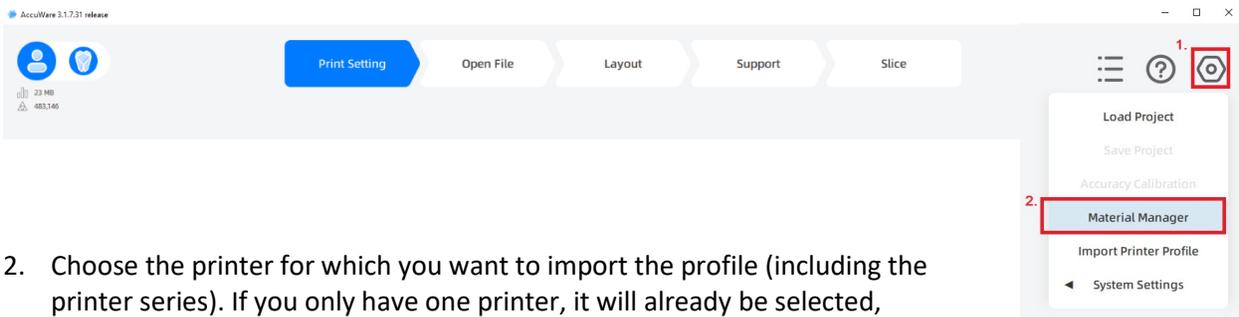
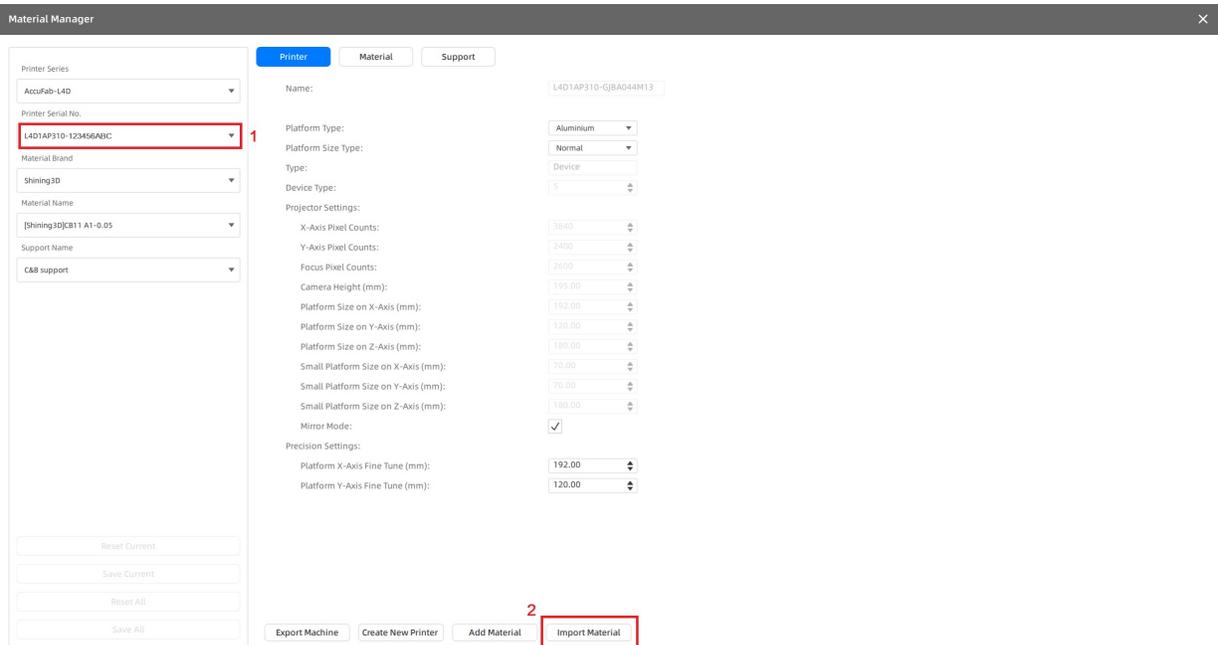


**IMPORTANT** : Accuware must be version 3.2.0.48 or higher.

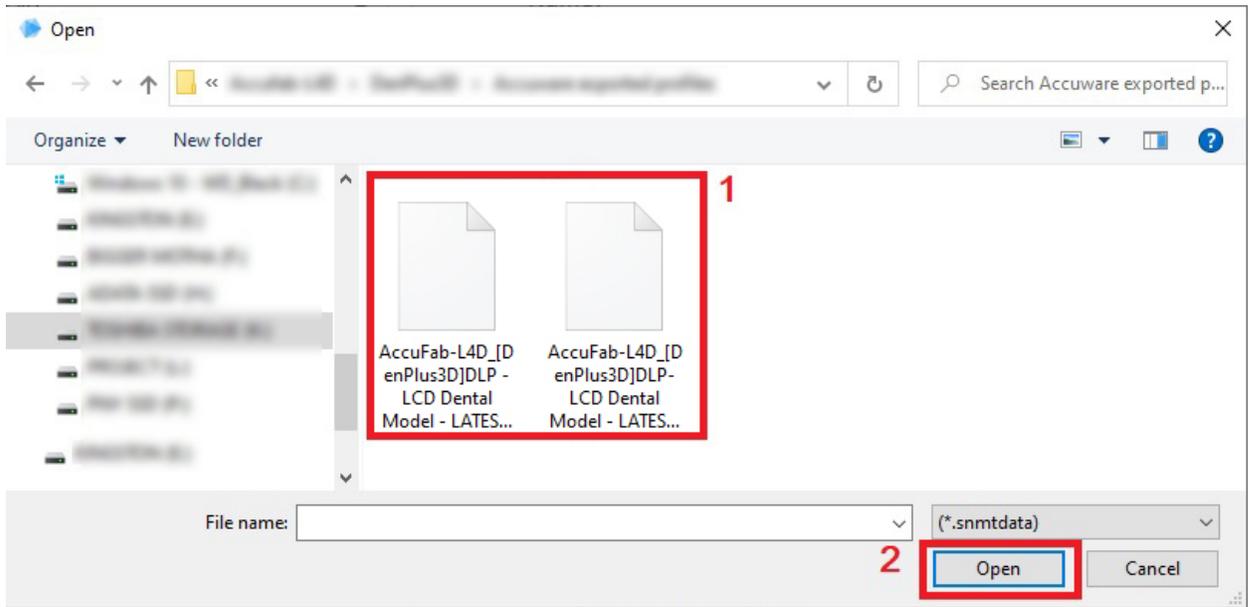
1. Access the **Material Manager** from the Settings:



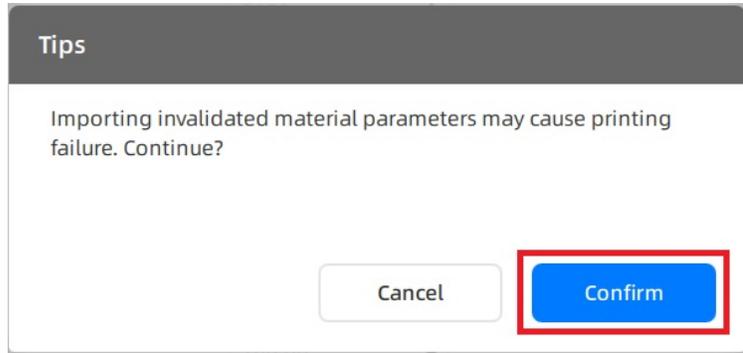
2. Choose the printer for which you want to import the profile (including the printer series). If you only have one printer, it will already be selected, otherwise, choose it according to its serial number. Then click on Import Material:



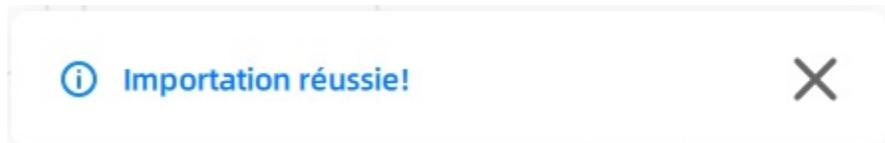
3. Navigate to where you extracted the contents of the .zip document that you downloaded from the DenPlus site, then select the two DenPlus3D material profiles (Hold down **Ctrl key** on keyboard + left click on each file) , and click Open:



4. A warning will appear. Simply click **Confirm** :



5. A pop-up will inform you that the operation was successful.



7. To validate that the materials have been added, click on **Material** at the top:

The screenshot shows the 'Gestionnaire de Matériaux' window with the 'Matériel' tab selected. The left sidebar contains dropdown menus for printer series (AccuFab-L4D), printer serial number, material brand (Liqucreate), material name ([Liqucreate]Strong-X-0.05), and support name (Regular). The main area displays settings for the printer model L4D1AP310-GjBA044M13, including platform type (Aluminium), platform size type (Normal), device type (Device), and various projector settings like pixel counts and platform dimensions. The 'Matériel' tab is highlighted with a red box.

8. Select **DenPlus3D** from the **Material Brand** menu:

The screenshot shows the 'Gestionnaire de Matériaux' window with the 'Matériel' tab selected. The 'marque matérielle' dropdown menu is highlighted with a red box and shows 'Shining3D' selected. The main area displays settings for the Shining3D material, including brand (Shining3D), name ([Shining3D]DC12-0.05), type (Material), and material settings like layer thickness (0.05 mm), material density (1.00), and consumption ratio (1.00).

The screenshot shows the 'Gestionnaire de Matériaux' window with the 'Matériel' tab selected. A dropdown menu is open, listing various material brands: Shining3D, BASF, Bego, DETAX, DMG, DenPlus3D (highlighted with a red box), Dreve, GorkyLiquid, Graphy, HARZ Labs, and Stratasys. The main area shows settings for the Shining3D material, including brand (Shining3D), name ([Shining3D]DC12-0.05), type (Material), and material settings like layer thickness (0.05 mm), material density (1.00), and consumption ratio (1.00).

Then, under the **Material Name** menu, the two DenPlus3D profiles (50µm and 100µm) should be found:

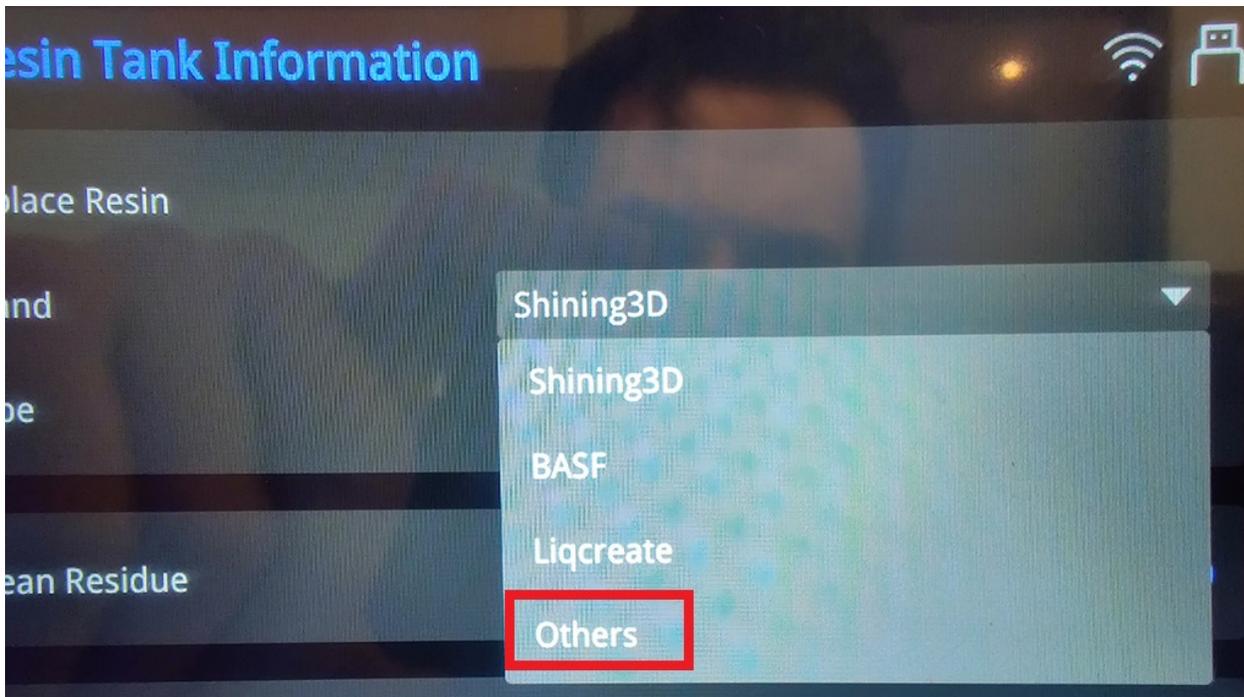
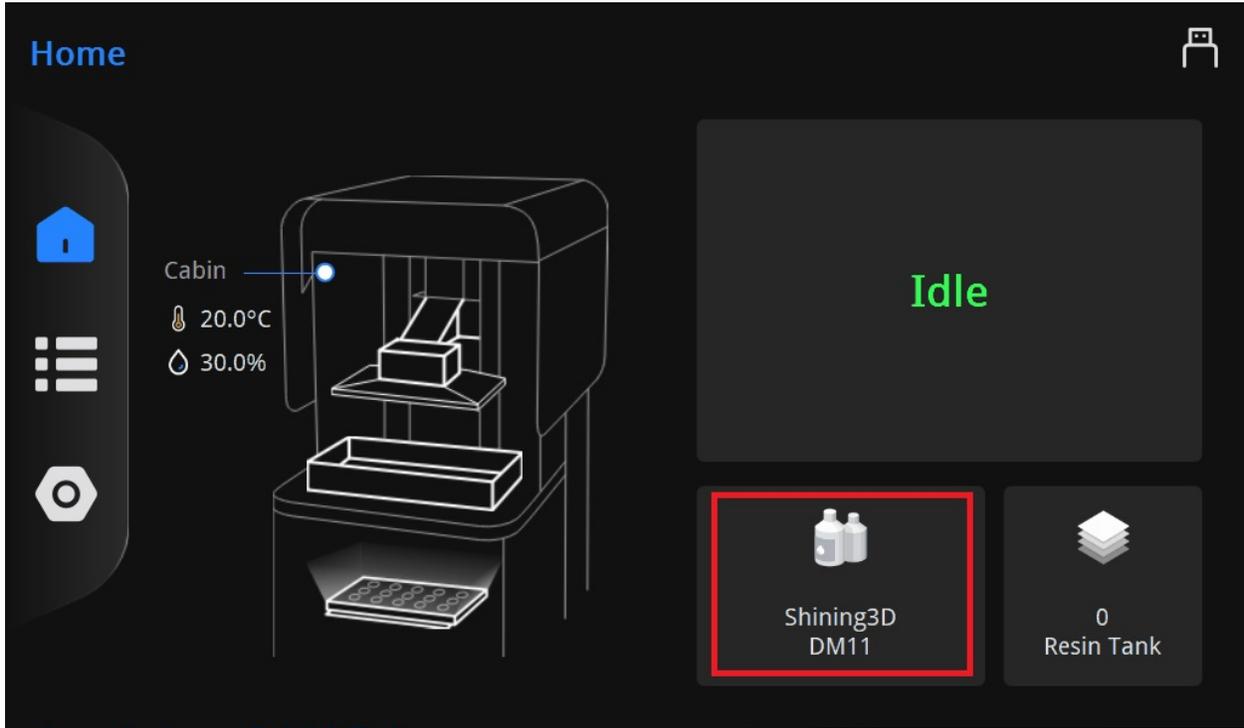
The screenshot shows the 'Gestionnaire de Matériaux' window. The 'Matériel' tab is selected. On the left sidebar, the 'Nom du matériel' dropdown menu is highlighted with a red box and displays '[DenPlus3D]DLP - Dental Model-0.05'. The main area shows configuration for this material, including Brand (DenPlus3D), Name ([DenPlus3D]DLP - Dental Model-0.05), Type (Material), and Show On Top (checked). Material Settings include Layer Thickness (0.05), Material Density (1.00), Consumption Ratio (1.00), Scale Offset X-axis Percent (100.39), Scale Offset Y-axis Percent (100.33), and various other parameters like Platform Size Type (Normal Size), Finished Lift Length on z-axis (80.00), and Antialiasing (2).

DenPlus3D material profiles include a selection of support (visible in the Support Name menu) adapted according to their application: **Dies**, **Direct on plate** and **Above plate**.

**Dies** are intended for printing dies 3mm above the printing plate, **Direct on plate** are intended for printing hollow models directly on the printing plate (When you print a hollow model directly on the plate, be sure to add enough drain holes at its base). **Above plate** are intended for printing models 3mm above the printing plate (no drain holes required).

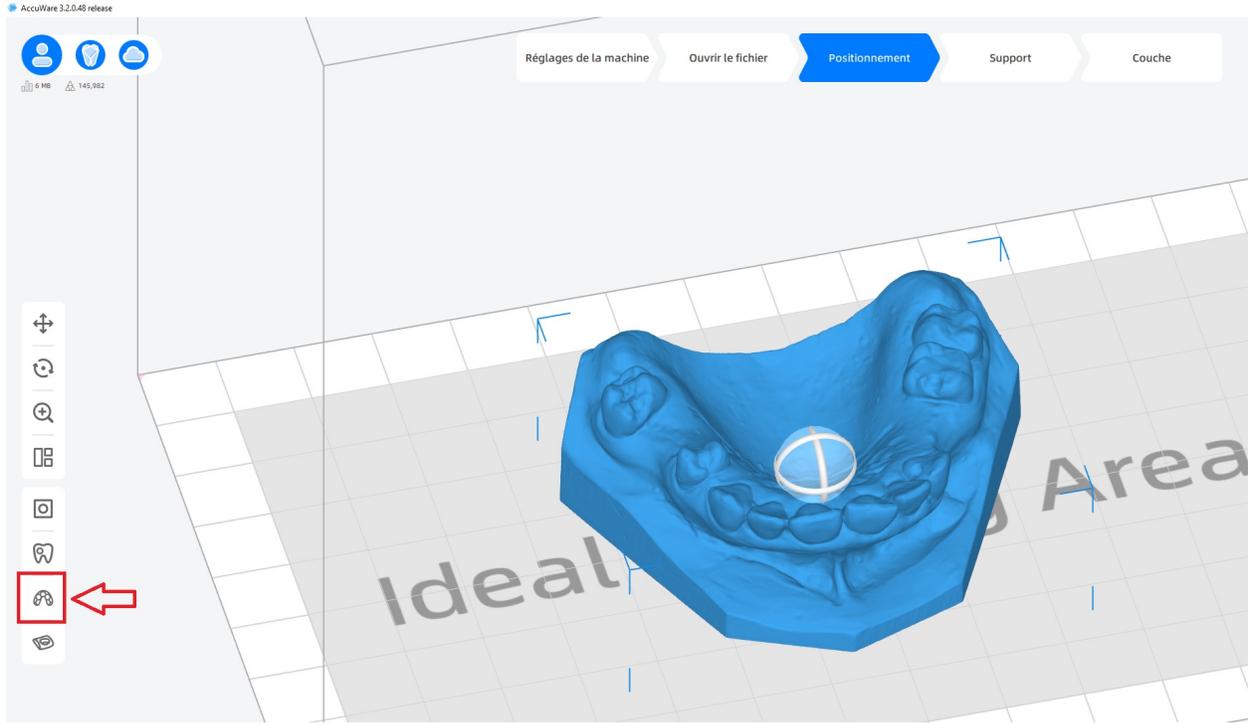
The screenshot shows the 'Material Manager' window with the 'Support' tab selected. The 'Support Name' dropdown menu is highlighted with a red box and displays 'Above plate'. The main area shows configuration for the support, including Name (D-051), Type (Device), Device Type (5), and Projector Settings (X-Axis Pixel Counts: 3840, Y-Axis Pixel Counts: 2400, Focus Pixel Counts: 2600, Camera Height: 195.00, Platform Size on X-Axis: 192.00, Platform Size on Y-Axis: 120.00, Platform Size on Z-Axis: 180.00, Mirror Mode: checked). Precision Settings include Platform X-Axis Fine Tune (192.00) and Platform Y-Axis Fine Tune (120.00).

**IMPORTANT:** Be sure to set your printer's resin tank to **Others**. This is done from the touch screen of your printer as shown in the images below:

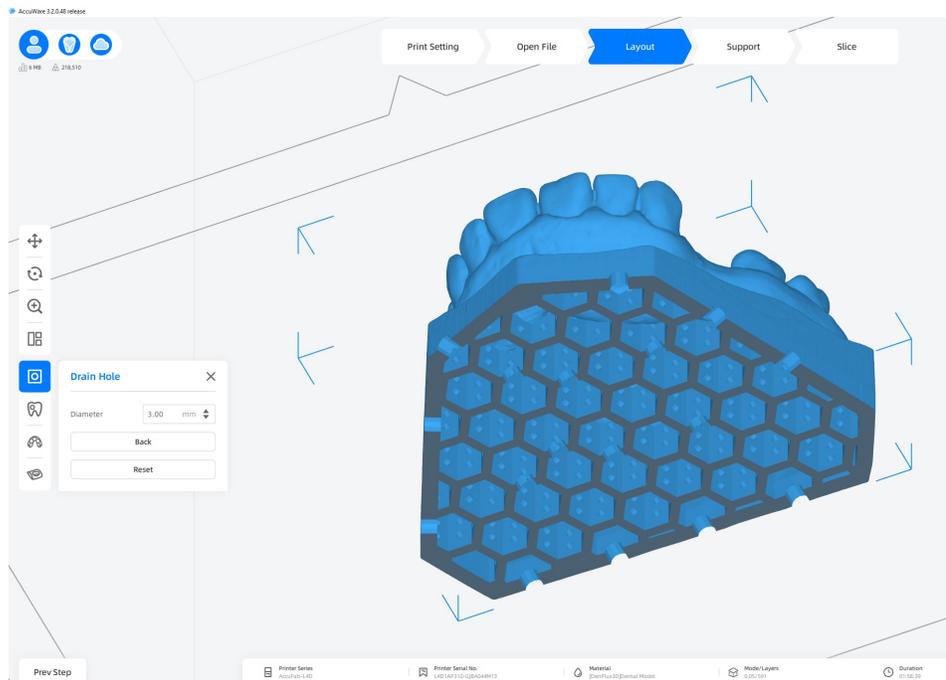


You are now ready to use DenPlus3D model resin with your AccuFab-L4D printer.

Please note that it is not recommended to print large models solid (e.g. full upper model with palate) as this type of printing generates a lot of heat and this can lead to warping of the base of the model. For your solid models, use the **One-click Honeycomb and Shell** function instead:



Then add drain holes at the base:



## Accuracy Calibration

The profile parameters of DenPlus3D model resin are the result of rigorous testing. These parameters were subsequently validated on several AccuFab-L4Ds before being published. We are confident in the results you will obtain, in terms of precision, by using these material profiles as is. However, we cannot assume that 100% of users will obtain the same results. Accuware has a resin profile calibration feature called **Accuracy Calibration**.

This function allows you to automatically calibrate three parameters whose values may differ from one AccuFab-L4D to another. Those are:

- **X and Y Scaling Compensation (%)**
- **Contour Compensation (mm)** for General Layers

Série de l'imprimante: AccuFab-L4D

Numéro de série de l'imprimante: L4D1AP310-GJBA044M13 Hors ligne

Type de plateforme:  Taille normale  petite taille

Matériel: DenPlus3D Dental Model (dental model)

Mode: 0.05

**Plus Réglages**

Angle de rotation: X 0 ° Y 0 ° Z 0 °

Compensation d'échelle: X 100.75 % Y 100.78 %

Compensation des contours: -0.013 mm

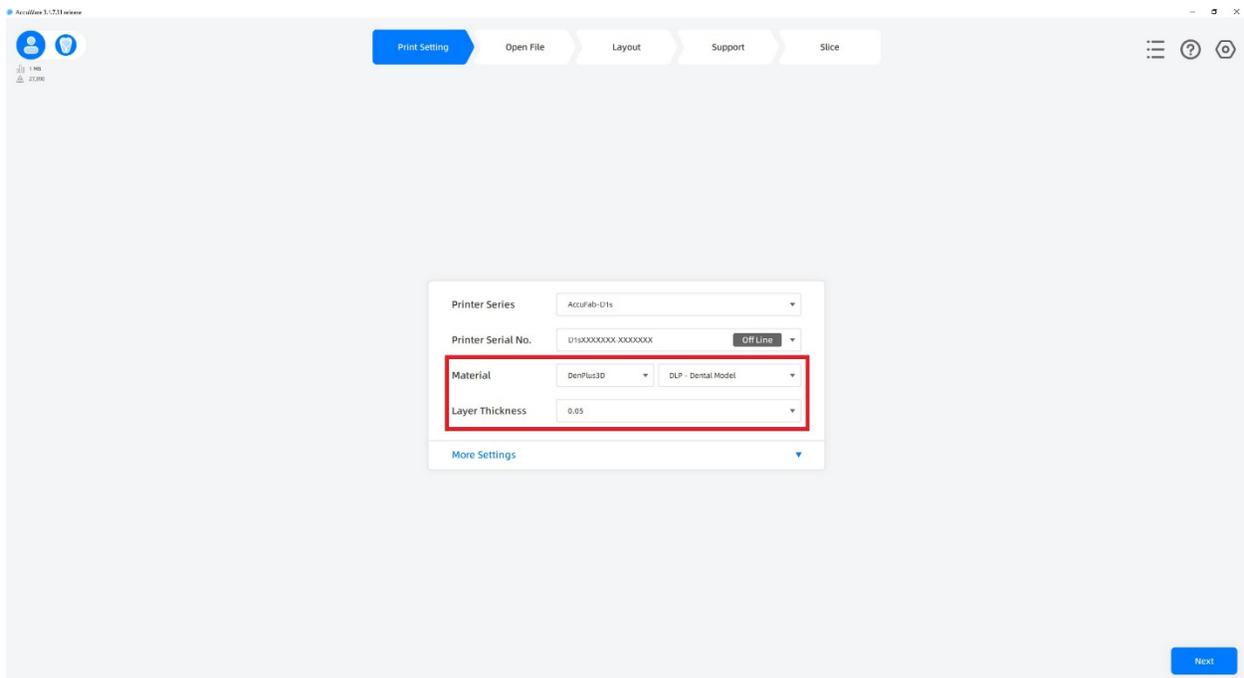
If the fidelity of your printed models deviates too widely from the original models, then use this function to fine-tune these parameters for your own AccuFab-L4D.

You will need a digital caliper, as shown here, set to mm.

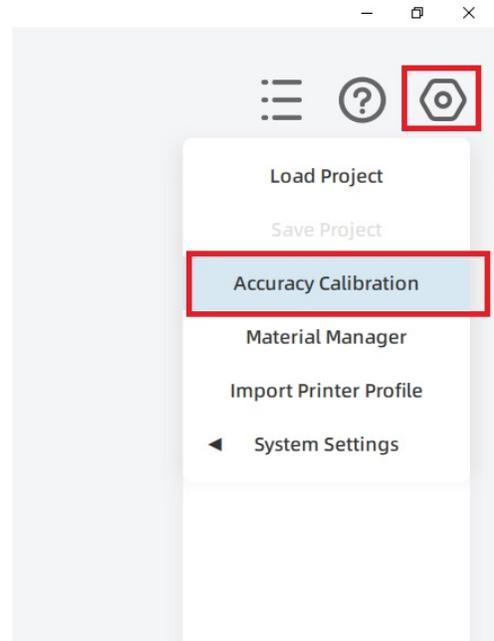


Before proceeding, make sure to fill your printer tank with DenPlus3D resin. The resin bottle should have been shaken well and the resin allowed to sit in the tank until it is free of air bubbles.

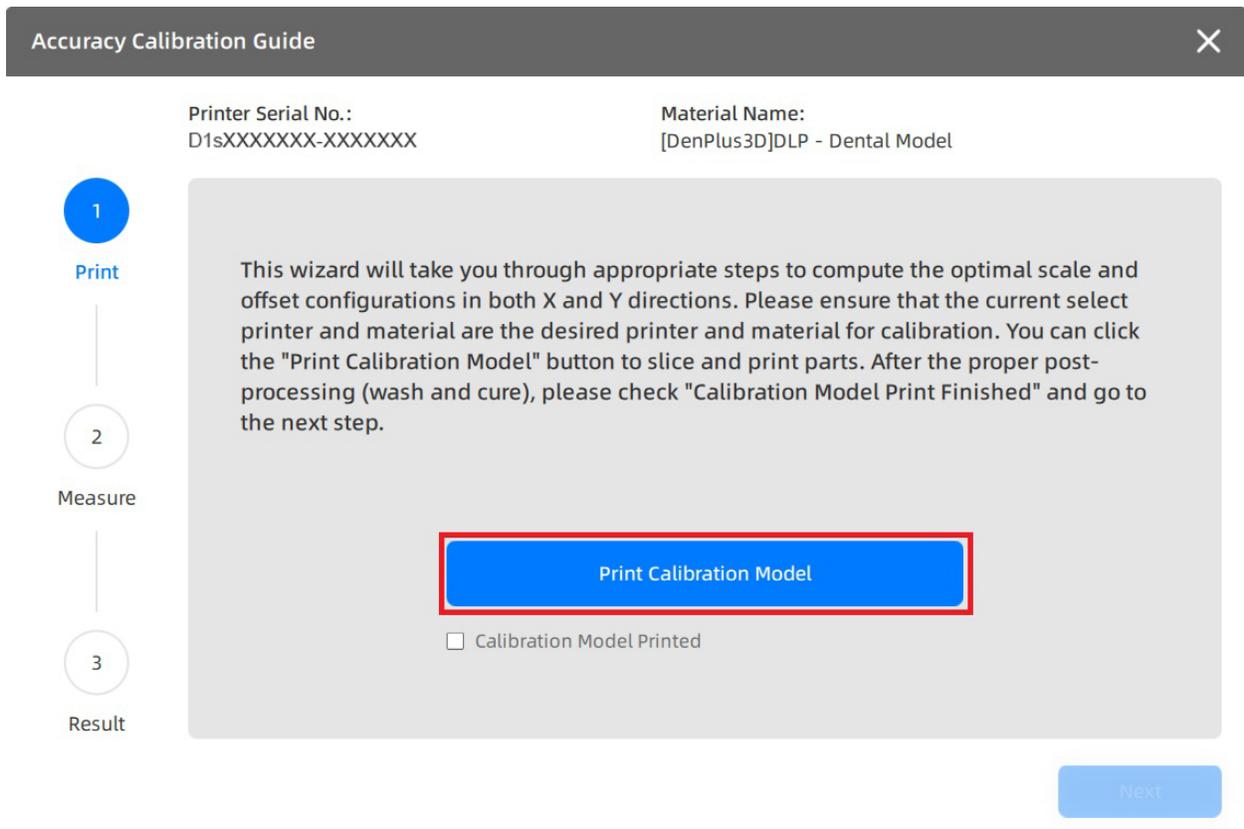
1. Launch Accuware and make sure the DenPlus3D DLP – Dental Model material is selected, then click **Next:**



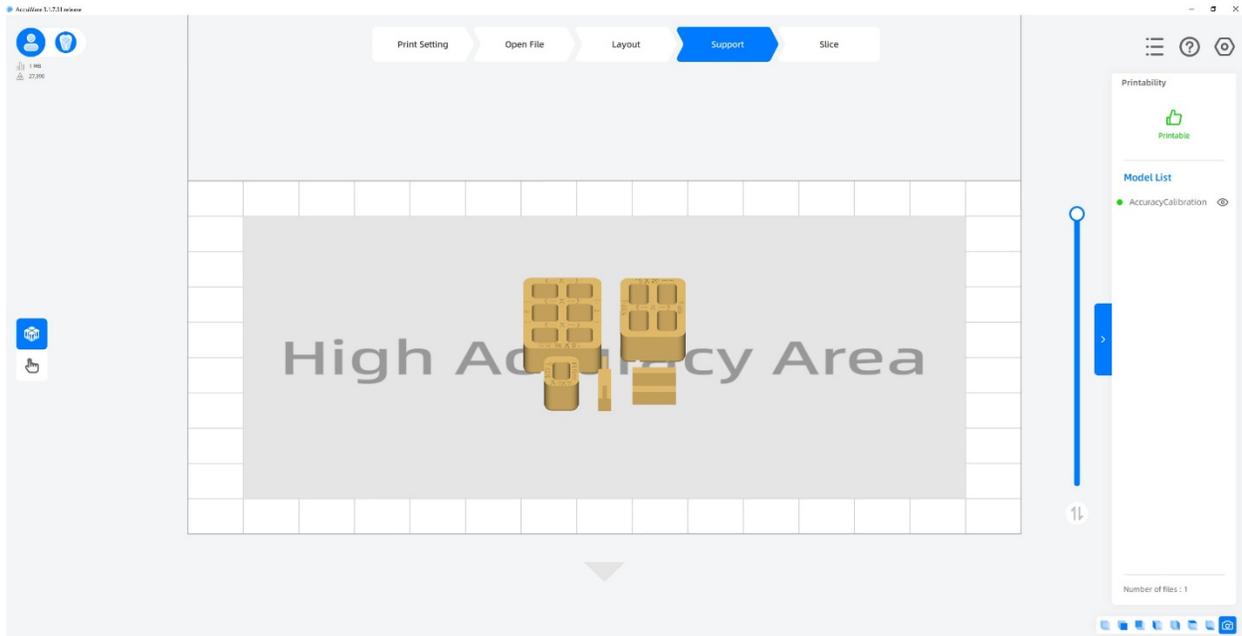
2. Open the **Settings** menu and click on **Accuracy Calibration**.



3. This will open the **Accuracy Calibration Guide**. Click **Print Calibration Model**:

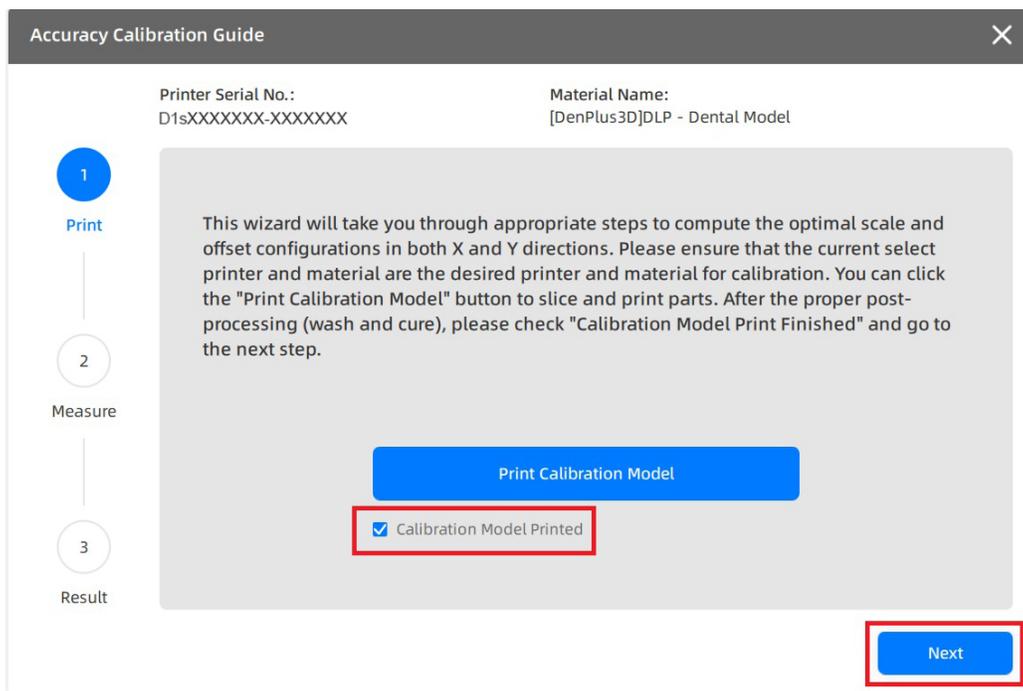


- This will instantly load and slice a set of parts in the center of the plate. Go ahead and print these parts.



Once printed, parts must be adequately washed, dried and post-cured for 35 minutes on one side then the other (total 70 minutes) in FabCure 1 (or equivalent), then allowed to cool to room temperature.

- Run **Accuracy Calibration** again, but this time check the **Calibration Model Printed** check box and click **Next**:



6. This will open the following table:

Accuracy Calibration Guide
✕

Printer Serial No.:  
D1sXXXXXXXX-XXXXXX

Material Name:  
[DenPlus3D]DLP - Dental Model

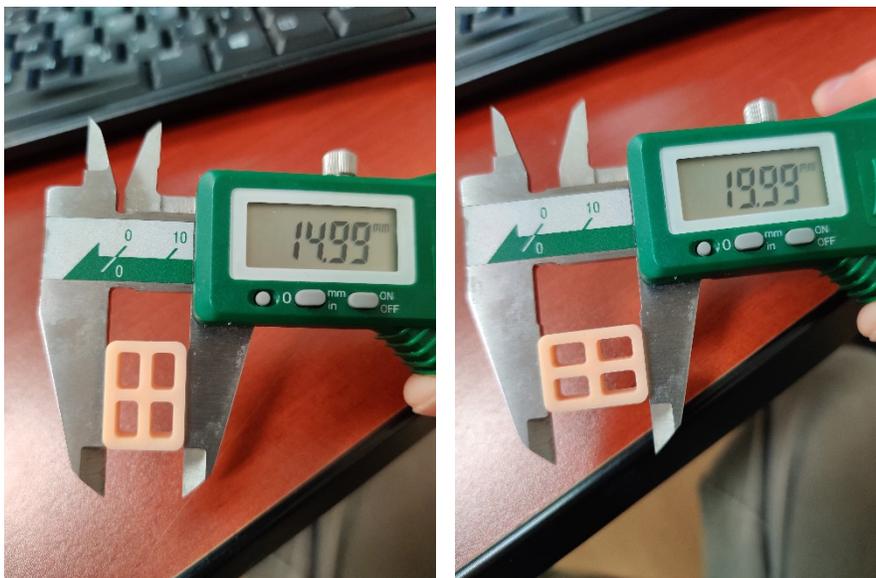
Unit: mm

	Axis	Standard	Average	Measure 1	Measure 2	Measure 3
<div style="text-align: center;">1 Print</div> 	X	18	0.000	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>
	Y	24	0.000	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>
<div style="text-align: center;">2 Measure</div> 	X	15	0.000	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>
	Y	20	0.000	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>
<div style="text-align: center;">3 Result</div> 	X	8	0.000	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>
	Y	10	0.000	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>
	X	1	0.000	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>
	Y	2	0.000	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>	<input type="text" value="0.000"/>

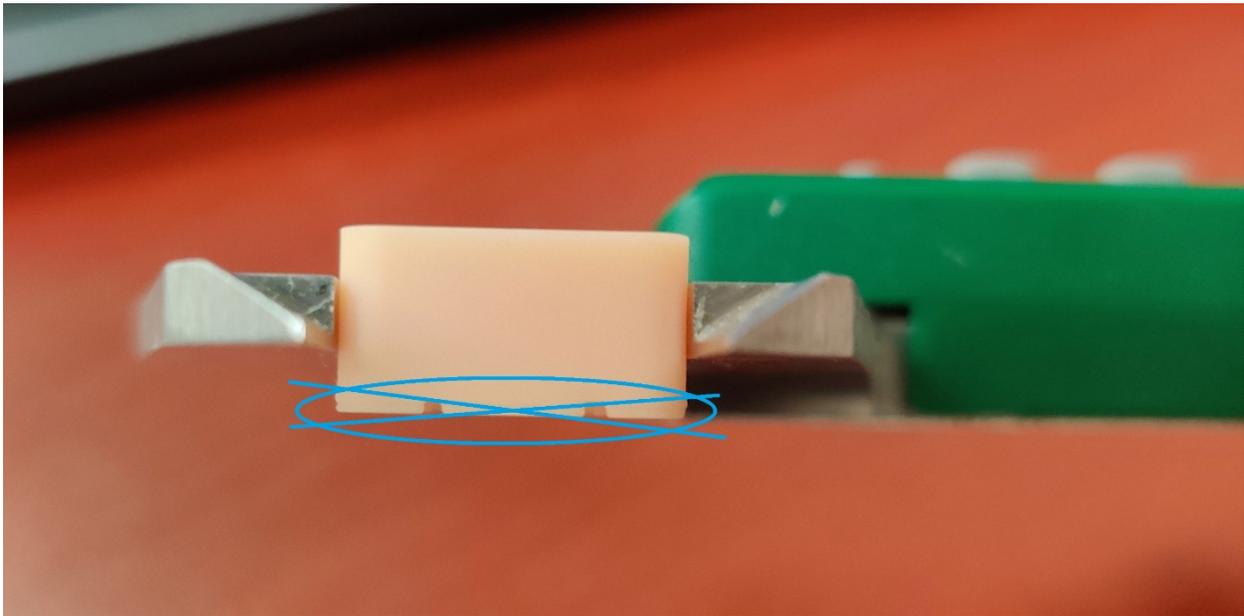
\* Fill in the measurement  
\* When "Average" is red, please check the measurements and completeness of the part.

7. Measure each of the X and Y dimensions of the corresponding parts, three times, and fill in each of the Measure fields. Make sure you enter the values in the correct boxes. Your three measurements may be the same, that's okay.

**IMPORTANT:** When measuring, make sure the part is lying flat against the thickest area of the caliper forks:



Also, do not take your measurements at the bottom of the parts (which is attached to the build plate) as these areas are naturally wider due to the longer exposure time of the first 20 layers:



8. Once the three columns are completed, click **Next** at the bottom right:

**Accuracy Calibration Wizard** ✕

Printer Serial No.: D1sXXXXXXXX-XXXXXXX      Material Name: [DenPlus3D]DLP - Dental Model      Unit: mm

	Axis	Standard	Average	Measure 1	Measure 2	Measure 3
1 Print 	X	18	17.970	<input type="text" value="17.970"/>	<input type="text" value="17.970"/>	<input type="text" value="17.970"/>
	Y	24	23.937	<input type="text" value="23.940"/>	<input type="text" value="23.940"/>	<input type="text" value="23.930"/>
2 Measure 	X	15	14.970	<input type="text" value="14.980"/>	<input type="text" value="14.970"/>	<input type="text" value="14.960"/>
	Y	20	19.990	<input type="text" value="19.980"/>	<input type="text" value="19.990"/>	<input type="text" value="20.000"/>
3 Result 	X	8	7.997	<input type="text" value="8.000"/>	<input type="text" value="8.000"/>	<input type="text" value="7.990"/>
	Y	10	10.007	<input type="text" value="10.010"/>	<input type="text" value="10.000"/>	<input type="text" value="10.010"/>
	X	1	1.027	<input type="text" value="1.020"/>	<input type="text" value="1.030"/>	<input type="text" value="1.030"/>
	Y	2	1.997	<input type="text" value="1.980"/>	<input type="text" value="2.000"/>	<input type="text" value="2.010"/>

\* Fill in the measurement  
\* When "Average" is red, please check the measurements and completeness of the part.

Accuware will calculate the values for **X and Y Scale Compensation (%)** and **Contour Compensation (mm)**. The values shown below are for example purposes only:

The screenshot shows a window titled "Accuracy Calibration Guide" with a close button (X) in the top right corner. The window is divided into several sections:

- Printer Serial No.:** D1sXXXXXXXX-XXXXXX
- Material Name:** [DenPlus3D]DLP - Dental Model
- Progress Indicator:** A vertical sequence of three circles. The first circle is labeled "1 Print", the second is labeled "2 Measure", and the third is labeled "3 Result" and is highlighted in blue.
- Instructions:** "Click 'Apply' to update the parameter of the current printer."
- Calibration Results:**
  - X Scale Factor:** 100.44%
  - Y Scale Factor:** 100.24%
  - Contour Compensation:** -0.003mm
- Navigation:** "Prev Step" and "Apply" buttons at the bottom right.

9. By clicking **Apply**, these values will automatically be set in your DenPlus3D material profile.

Repeat steps 4 to 7 to validate if your results are closer to the standard measurements and repeat the calibration process again if your results are still too far from the standard measurements. It is not out of the ordinary to repeat this process three times. Note that it is almost impossible to obtain the exact X and Y dimensions on all calibration parts. What you are looking to get are measurements to within +/- 0.05mm.

Accuware's Accuracy Calibration function assumes that you are printing parts no thicker than 5-8mm. If you're primarily printing full, thick models, you'll probably need to increase your X and Y Scale Compensation (%) and Contour Compensation (mm) settings a bit more manually, because larger volume means a higher contraction rate.

### Final Recommendation

Once you are satisfied with your calibration results, we recommend a final exercise to ensure your calibration is optimal. Print a dental model from an intraoral scan or a scan of a stone model, for which you have already produced, and have in hand a precise zirconia or porcelain restoration that perfectly fits the original model. Test the adaptation of the restoration on the printed model. It should fit the same way. We did this same exercise with several cases of bridges and crowns.

## Other Tips:

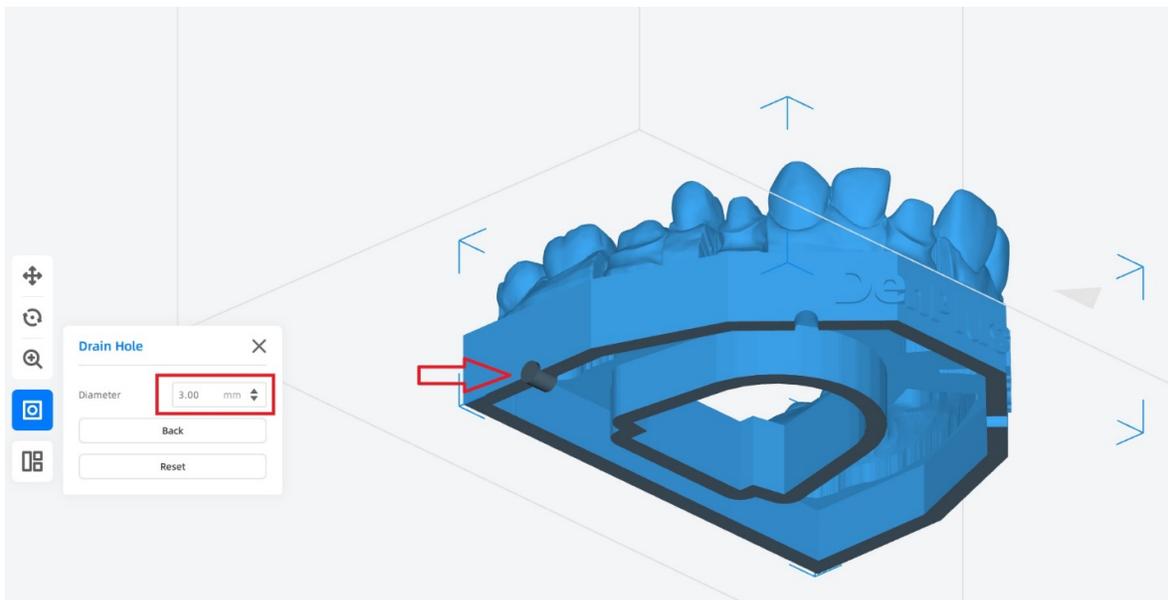
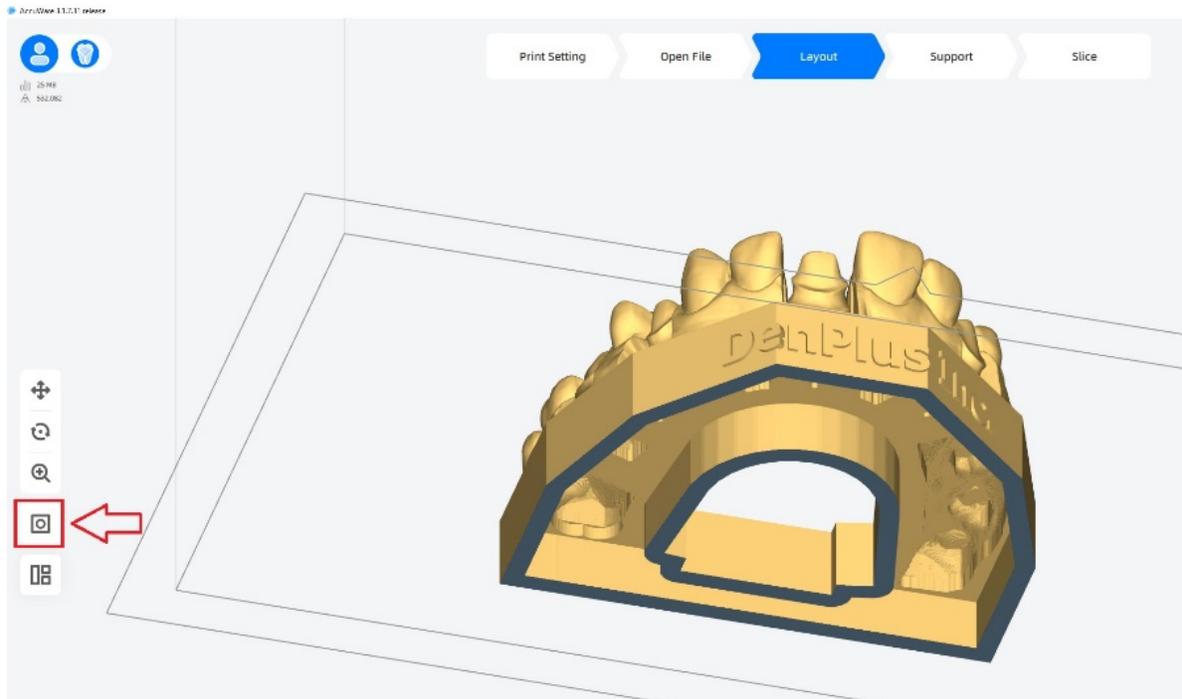
1. If your models fall off the printing plate or partially separate from the plate during printing, there are several possible causes and common sense should be used to find the cause.
  - The most common cause is an incorrectly leveled printing plate. It may have been well leveled for a while, but over time it will gradually shift. Significant changes in ambient temperature can also affect the leveling. It is important to re-level your plate from time to time.
  - If you've been printing for a while, it's likely that your printing plate has become smoother due to frequent scraping and cleaning. To give it a more adherent surface, you can either scratch the surface with 80-grit abrasive paper, or micro-sand it with 50  $\mu\text{m}$  aluminum oxide. In the second case, make sure to only expose the printing area of the plate and clean it carefully afterwards.
  - If your printing plate is leveled and the surface is in good condition, you may need to increase the three **Enhanced Layers** values: **Fill Exposure Time**, **Boundary Exposure Time**, and **Support Exposure Time** by a few seconds:

	Enhanced Layer	Medium Layer	General Layer
Layer Counts:	3	16	0
Exposure Level:	Mid Power Mode	Mid Power Mode	Mid Power Mode
Fill Exposure Time (s):	14.00	6.20	4.30
Boundary Exposure Time (s):	14.00	6.20	4.30
Support Exposure Time (s):	14.00	6.20	4.30
Wait Time on Top (s):	1.00	1.00	0.00
Wait Time before Exposure (s):	2.00	2.00	2.00
Wait Time after Exposure (s):	0.00	0.00	0.00
Slow Lift Length on z-axis (mm):	2.0	2.0	1.5
Slow Lift Speed on z-axis (mm/min):	60	60	60

If, on the other hand, your models are too difficult to remove from the plate, decrease the same settings in 1 second increments.

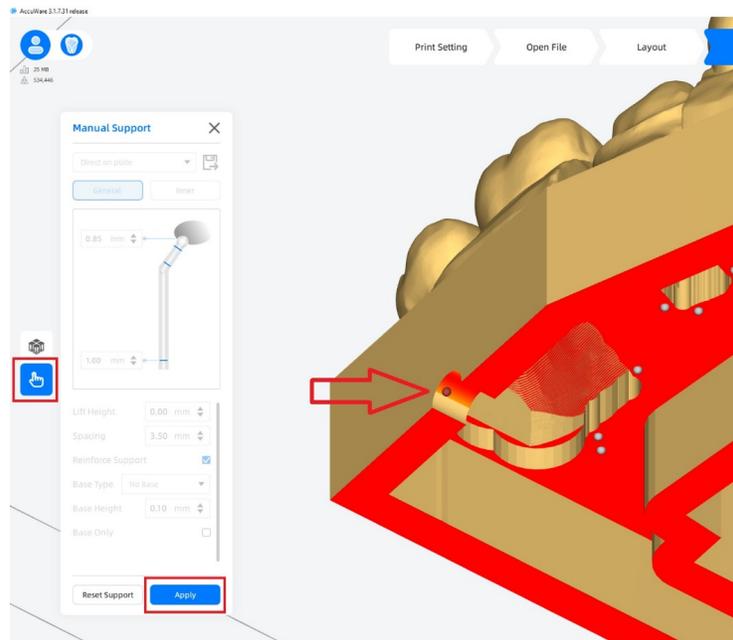
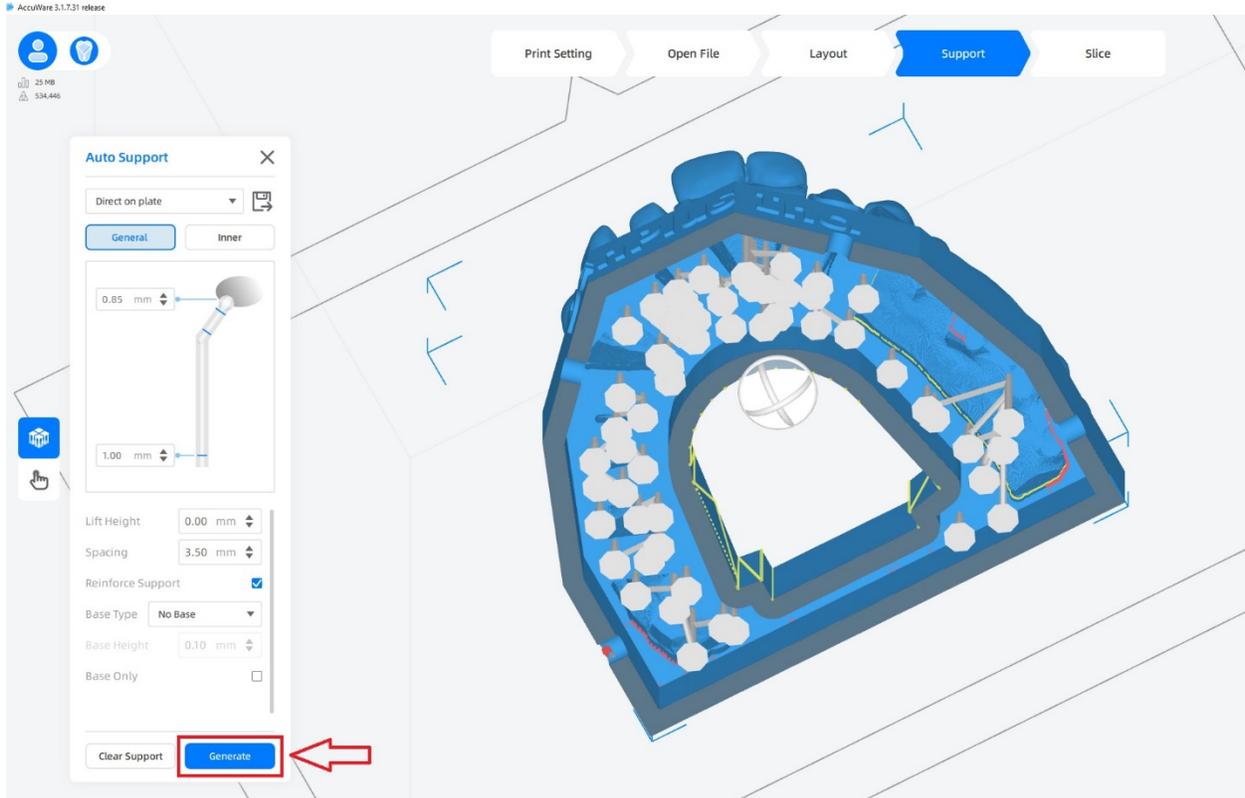
Note that these settings, accessible via the **Accuware Materials Manager**, are only visible if **Engineer mode** is enabled. Contact your Shining 3D representative to find out how to enable it.

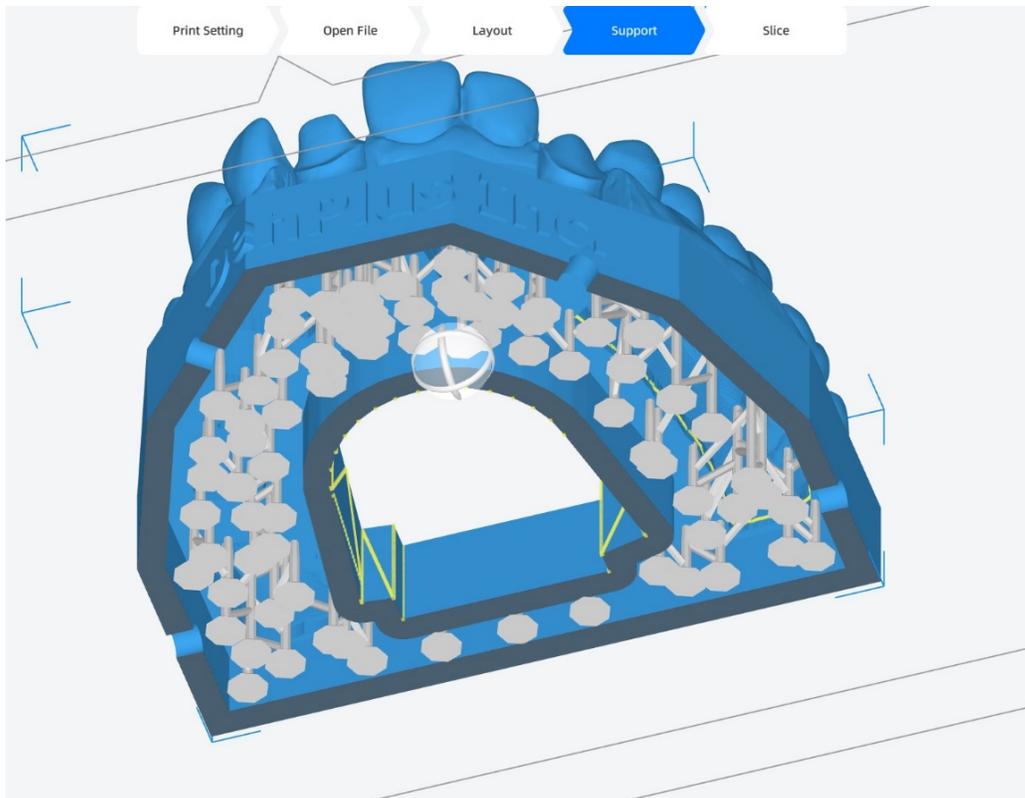
2. If you print hollow models directly on the plate, it is imperative to place drain holes (minimum 6 for a full arch) at the base of the models. A diameter of 3 mm is generally sufficient.



3. Hollow models require supports. In AccuWare, select our **Direct on plate** support profile and, first, use **Auto Support** to generate them.

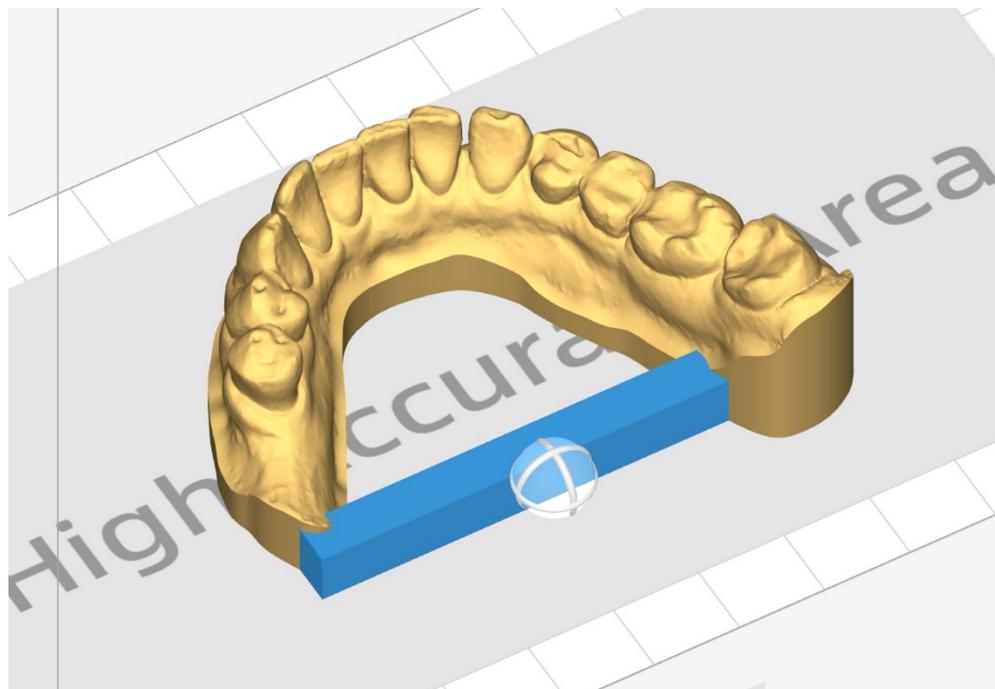
Next, switch to **Manual Support** to add additional supports in the red areas, if necessary, and remove unnecessary supports in the drain holes.





4. Use common sense when designing your models:

- Hollow models must have a minimum thickness of 2.5 mm.
- Lower arches may warp inward. To avoid this, place a bar at the bottom that connects the two posterior ends:



5. When designing a complete top model with arch, which will be printed directly on the plate, add enough height to the model so that the lowest part of the arch is at least 6mm from the ground. This ensures that no part of the palate is made up of Reinforced Layers or Medium Layers, but also reduces the risk of experiencing a printing error or distortion in the palate. As mentioned above, an internal honeycomb structure is recommended for this type of model rather than a shell or solid model.

