

# EPAX 3D



# DENTAL USER MANUAL

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# DX SERIES SPECIFICATIONS

## EPAX 3D

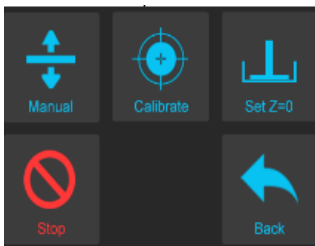


<b>Model</b>	<b>EPAX DX1 Pro</b>	<b>EPAX DX10 Pro</b>	<b>EPAX DX Cure Pro</b>
<b>Build Volume (L*W*H)</b>	143.43mm*89.66mm*120mm	221.4mm*129.6mm*120mm	
<b>Printing Technology</b>	Monochrome LCD	Monochrome LCD	UV Curing Box
<b>Material</b>	Resin	Resin	Washed Resin Prints
<b>Resolution</b>	4098*2560 (4K)	4920*2880 (5K)	
<b>Layer Thickness</b>	0.02 ~ 0.1 mm	0.02 ~ 0.1 mm	
<b>Connection</b>	USB Flash Drive, Ethernet	USB Flash Drive, Ethernet	
<b>Wi-Fi</b>	No	No	No
<b>Build Platform</b>	Soft Aluminum with Steel FBS	Soft Aluminum with Steel FBS	Clear Acrylic Turntable
<b>Resin Vat</b>	Hard Aluminum	Hard Aluminum	
<b>Heated Vat</b>	Yes	Yes	
<b>Max Resin Volume</b>	300mL (With Platform)	700mL (With Platform)	
<b>Air Purifier</b>	Yes	Yes	
<b>Light Source</b>	Parallel Light LED Matrix	Parallel Light LED Matrix	Lensed UV LEDs
<b>Film</b>	nFEP Film	nFEP Film	
<b>Touch screen</b>	4.3-inch Color TFT	4.3-inch Color TFT	No
<b>File Type</b>	.stl .ctb	.stl .ctb	N/A
<b>Slicer</b>	ChiTuBox	ChiTuBox	N/A
<b>Product Size (W*D*H)</b>	9.5 x 9.5 x 14.5 inches	11.75 x 12.5 x 15.25 inches	11.75 x 11.75 x 8.5 inches
<b>Product Weight</b>	20lbs	35lbs	12lbs

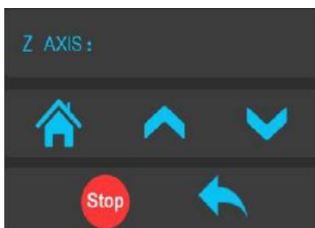
# TOUCHSCREEN MENU

## TOOL PAGE

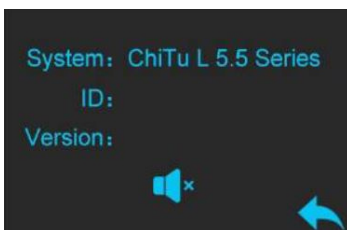
The tool page contains manual z-axis controls, exposure tests, and a cleaning feature. You may also rest the Z=0 (logical position) here.



The manual page, also allows you to manually move the printer to the home (physical zero) position.



Exposure/Clean, on the page above set the amount of time you want the screen to run with these features.

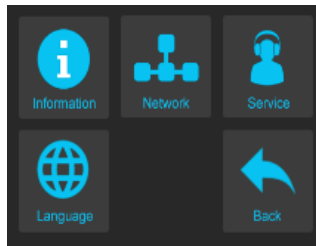


Exposure tests are for ensuring the screen is working as intended.

The cleaning feature allows you to check the screen for dead pixels and clean the vat.

## SYSTEM PAGE

The system page contains product information, contact info, network info, and a touchscreen calibration figure.

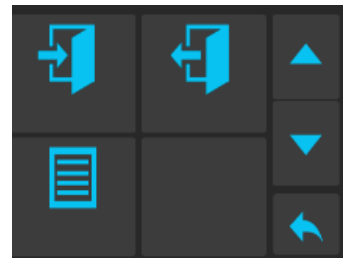


## INFORMATION PAGE

The information screen above informs which firmware you are running and what resolution your screen is displaying.

## PRINT PAGE

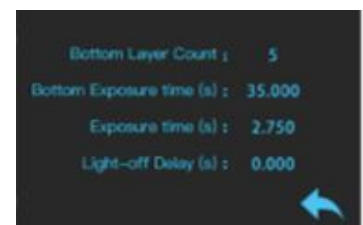
The print page displays the select files to print from your USB drive. This is also where you can perform updates as well.



From the print screen you can choose to print or delete the file from the USB



You may also edit your bottom layer count and exposure settings mid-print if needed.



# DENTAL RESIN LIST

We have tested and validated a wide range of dental resins for you to utilize with the DX series of printers and have more coming as we grow.

EPAX	Dentona Optiprint	Keystone	Whipmix
Dental Model Resin	Guide 385nm and 405nm	KeyModel Ultra	Verimodel OS Ivory
Hard Resin	IBT 385nm	KeySplint Soft	Verimodel OS White
Bio-Based Soy Resin	Gingiva 385nm	KeySplint Hard	Vericast OS
Porcelain-Like Resin	Model 48052		Veriguide OS
All other EPAX resins are compatible and verified	Model 48053		
	Model 48213		
	Model Align		

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Alongside our own Dental Model resins and all other EPAX resins, we've verified compatibility with mainstream 3rd party resins listed above.

If you are using a resin that is not listed in the tested resins, we recommend talking to the resin manufacturer about settings. Many dental resins can differ greatly despite being for the same purpose, so while we may be able to give general guidance, we won't have concrete settings.

For assistance at any time please visit our ever-growing Facebook Dental group. Many of our users are very active and give advice on the page, including slicer settings for specific resins that we may not have tested yet. Request to join at the link below:

<http://www.facebook.com/groups/epaxdental>

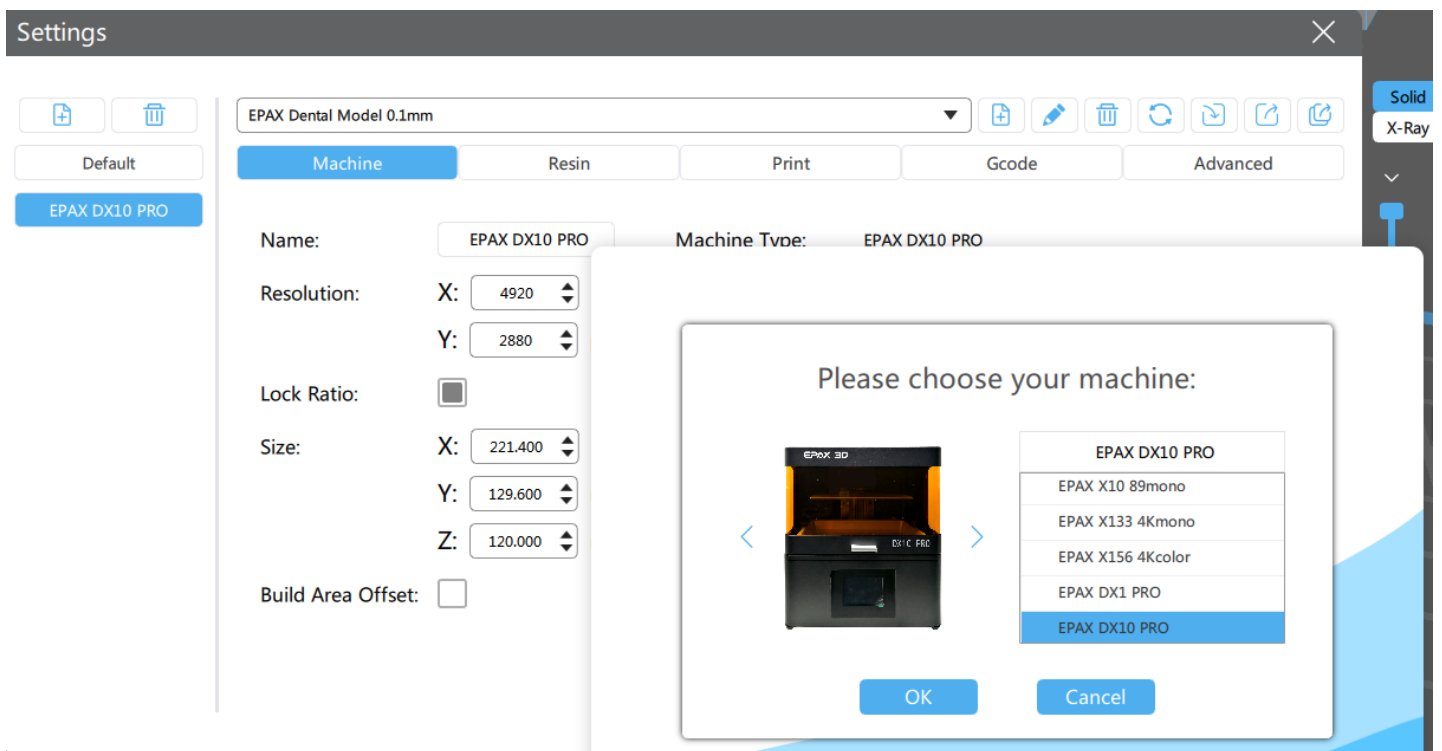
# SLICING SOFTWARE

For the latest slicer download, please visit:

<https://epaxdental.com/pages/software>

## Slicer Settings

The latest version of ChiTuBox also has settings preloaded for most resins including dental resins. After you open the ChiTuBox slicer for the first time, you will need to add your printer in. Click the "Settings" button on the right bottom side. Then click the "+" button on the top left side of the "Settings" window. Then in the pop-up window select "EPAX" and then select printer model. "DX1 PRO" and "DX10 PRO" are our dental printers. Make sure you do this before your first print. Displayed below is how everything should look once you select your printer.



# BRIEF EXPLANATION OF STANDARD PRINT SETTINGS

**THE CORRECT PRINT SETTINGS ARE CRITICAL FOR SUCCESSFUL AND ACCURATE PRINTS, BUT THERE IS AN ACCEPTABLE RANGE FOR MOST TYPES OF RESIN. SOME RESINS ARE ALSO IMPACTED BY THE TEMPERATURE IN THE PRINTING ENVIRONMENT, AND YOU WILL NEED TO ADJUST YOUR SETTINGS ACCORDINGLY. GENERALLY, RESINS PREFER WARM TEMPERATURES, AND MANY DO WELL BETWEEN 25°C AND 30°C (~77°F AND 85°F) .**

- **Layer Height:** 0.05mm is recommended (range: 0.02- 0.1mm) The thicker the layer height, the longer the exposure time per layer needed, but the shorter the print time. Models may be less accurate with thicker layer height.
- **Exposure Time:** Amount of time it takes to cure each layer of the print and varies depending on resin.
- **Bottom Exposure Time:** Amount of time it takes to cure the bottom layers of the model to adhere to the and varies depending on resin. The longer the bottom exposure time, the better the bottom layer will stick to the plate. Don't go too long, or you'll end up needing to chisel the print off.
- **Bottom Layer Count:** More bottom layers will allow for stronger adhesion. We recommend sticking with 4.
- **Rest Time/Light off Delay:** For resins requiring exposure times higher than 4s, we recommend adding rest time or light off delay to allow heat to disperse between layers. This will increase print times, but the print will better retain its intended properties and accuracy.
- **Lift Distance/Bottom Lift Distance:** How much the platform lifts between layers.
- **Lifting Speed/Bottom Lift Speed:** How fast the platform lifts after finishing layers.
- **Retract Speed:** How fast the platform lowers to the next layer.

# BRIEF EXPLANATION OF STANDARD PRINT SETTINGS (CONT.)

## NOTES ON SPEEDS AND DISTANCES

- Lifting Speed - Increasing this will speed up how fast the build plate lifts the print off of the film. **WARNING:** Going too fast could result in failed prints or torn film meaning wasted resin and potential damage to the screen/machine. Do not increase too much.
- Retract Speed - Increasing this will speed up the build plate lowering back down after lifting. **WARNING:** Going too fast could result in prints prematurely lowering before resin fills in gaps in the vat. This will result in missing layers and potentially broken or failed prints.
- Lifting Distance/ Bottom Lift Distance: The preset values we have on our website, and in ChiTuBox can be decreased depending on the print job and layer height to save slightly more time. **WARNING:** Lowering too far can result in the print not fully peeling off the film. Can result in missing layers, failed prints, and broken nFEP in worst cases.

## SUPPORTS

Models that cannot sit flat on the platform (Guides, Splint, etc.) will need additional supports while printing. (All supports will need to connect with the foundation or stable part of the print for success. You can always remove them from your final product.)

*There are 3 default support options:*

- Light: Small Contact area. Best for small prints and in detailed areas.
- Medium: Larger contact area, and stronger than light supports.
- Heavy: Largest contact area and are the strongest support settings.

Rafts are recommended for prints that aren't touching the platform at all i.e. the print is suspended. Can be edited for stronger adhesion to the build platform.



# DX PRINTER AND CURE PRO SETUP

Our Quick Start guide goes through the setup of the printer as well. We'll go over the cure pro and the printer setup here so you can reference either.

## DX CURE PRO

The DX cure pro is a very simple setup. Most of the machine is already put together, the only part you'll need to put on is the acrylic turntable. The acrylic turntable slots right into the middle post. Please ensure that you remove any protective paper on the acrylic turntable before installation to provide best performance when post-curing. Before post-curing a print, make sure it is fully dry from its wash so it doesn't come out tacky after the post-cure. Go ahead and test the machine by pressing the play button to make sure the turntable is rotating, and the lights are coming on.

## DX PRO PRINTER QUICK SETUP

*All the accessories are packed inside the printer. Be careful when you remove the foams. Remove each foam layer starting from the top. You should find:*

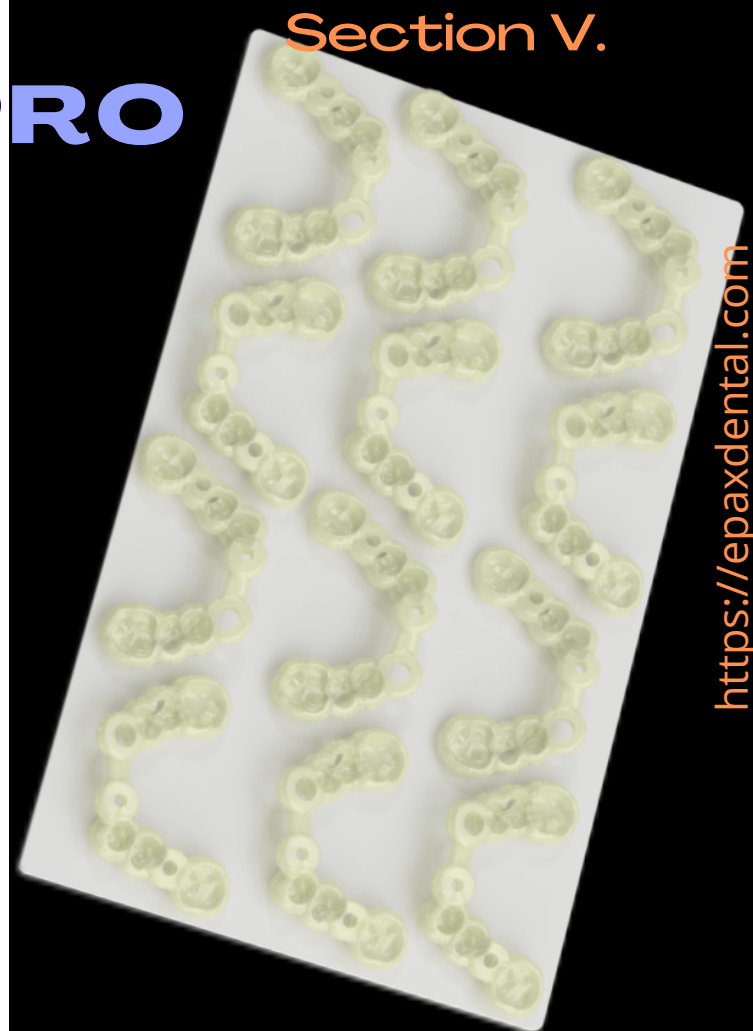
*Metal vat and build plate, metal and plastic spatulas, 2.5 and 3mm Allen Keys, USB, Power Supply, Vat Knobs, and Build Platform Knob Screw.*

### Check the Light Source and LCD Functionality

After turning on the printer, you should check the light source and LCD by pressing Tools→ Exposure→ Next. It will turn on UV light and a rectangle shape will be displayed that will match the image on the touchscreen. Press the return button to stop the testing. Do this after every time you replace the LCD to test its functionality.

### Check the Z-axis Movement

Test the Z-axis movement by pressing Tools→ Manual→ Auto Home. It will move the build platform arm to the Home position. You can also press the Up button to move the Z-axis up. Do not try to move the Z-axis down below the home position.



Section V.

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### Install Build Platform

Move the platform arm a bit higher than the printer's Home position. Goto Tools→ Manual, select the 10mm increment, then hit up a few times so that you can move the z axis a bit above Home position. Then put platform on and ensure platform fits into this location and secure its screw.

### Install Resin Vat

Move Z axis about 100mm up so that you have room to put the vat on. Make sure there is no paper or plastic wrap between the screen and the vat. On the DX series the back of the vat will have a wire running out the back right for the heating feature. The vat slots on the two screws on each side and you can use the knob screws to secure it in place. Once this step is complete, we can move onto to the first print. The vat also has a heating feature and can be plugged in on the back right . For now, we only recommend its use for our EPAX line of resins. For use with our other compatible dental resins, leave unplugged.

# THE PRINTING PROCESS: DENTAL MODEL



**MAKE SURE YOUR MACHINE IS PLACED ON A STABLE, FLAT SURFACE. BY THIS POINT YOU SHOULD HAVE CHITUBOX INSTALLED, AND THE PRINTER'S CONFIG LOADED ONTO THE SETTINGS (REF: SECTION IV)**

## 1: SLICE YOUR PRINT

Open up Chitubox and start with a basic dental arch model and place it flat on the platform. If your dental model doesn't have a flat base, you can lower its z-height a couple of mm using the move tool on the left-hand side of the slicer. Dental models are best printed flat to the plate, but you can use supports if needed. Once the dental model is set up, slice the model. After the software has finished slicing you may save the file directly to the USB.

If your printer is connected via ethernet to a router, you can opt to send the print via the network send feature instead. When doing this, make sure the USB is plugged into the machine. You can select your printer from the Dropdown menu on Chitubox. Once sent, you'll be prompted if you want to go ahead and start the print as well. If you choose to do so later, you can start the print manually from the printer as the print is now on the USB.

## 2: LOAD RESIN

Each resin vat has a maximum capacity with and without the build plate. There are tick marks indicating fill lines. It's recommended to only fill to the first tick mark when starting a print. Unless you are utilizing the full build volume, you will rarely ever need to fill the vat to max capacity. Please make sure for whichever resin you are using, you shake the bottle well, or swirl if the manufacturer says otherwise because resin can settle and may need a bit of mixing before usage.

**!EXTREME CAUTION!** Always wear gloves, goggles, and a mask for your protection when handling liquid resin. If liquid resin gets on your skin, immediately wash the afflicted area with soap and hot water.

## 3: STARTING YOUR FIRST PRINT

Insert the USB onto the printer and tap the print button on the main menu. Find your file, tap it, and hit the play button to start the print.

For the first print, it is a good idea to check on the print after around 30 minutes to confirm that the first layers stuck to the build platform. If the print does not stick to the build platform, then either the bottom exposure time is too low, or the platform is not leveled properly. In which case, contact EPAX 3D to provide you guidance.

# THE PRINTING PROCESS: DENTAL MODEL

## 4: POST-PROCESSING

When the printing is done, wait until no more residual resin drips from the platform and wear gloves before removing it. You can wipe off any residual resin as well.

Our DX series comes with a Flexible Build System. Using the metal tab sticking out from the platform, you can remove the Flex plate from the brown magnetic base. To remove the print, simply flex the plate to pop the print off. It's best to pop the print off directly into the IPA bath to avoid the print popping off onto the floor or table. Soak the print in at least 91% IPA (Isopropyl alcohol) for about 10-15 minutes. For some dental resins you may need to leave it in for longer or agitate the IPA so that the residual liquid resin can be cleaned off.

After your model is clean, put it in a cool, dry, well-ventilated area until it dries, or dry it up with a air blower. Please make sure to still be wearing gloves during this time. To cure it, you can insert the model into our DX Cure Pro machine. Set the timer for 180s, and at the end the print should be good to be used. The print should feel like plastic. If it still feels tacky, or not dry you may not have let the print dry for long enough, or the environment may be too humid to dry properly. In this case, consider utilizing a fan to blow on the print while drying.

# TROUBLESHOOTING

Email us directly at [support@epaxdental.com](mailto:support@epaxdental.com).

We provide technical support Monday-Friday 9am to 5pm EST. In certain cases, we may even provide video conferences to provide solutions or direct troubleshooting. Any questions related to your order may be directed to our sales team at [sales@epaxdental.com](mailto:sales@epaxdental.com).

## **FOR ADDITIONAL SUPPORT:**

You can also join our Facebook Group to get help from other users, especially if you need help tuning slicer settings. There are too many resins out there for us to cover every single one, but many experienced users who have used a variety of resins and can help the best when it comes to dialing in settings. Each particular model might need different support methods and positioning. These are the experience related questions which we rely on our community to help each other. Most of them are just fine tuning your slicer settings for the particular scenario. Please don't hesitate to ask any questions you may have in our Facebook group:

<http://www.facebook.com/groups/epaxdental>

# WARNINGS

**IT IS STRONGLY RECOMMENDED THAT YOU WATCH OUR TUTORIAL VIDEOS BEFORE OPERATING YOUR PRINTER FOR THE FIRST TIME.**

For printer instructions, videos, firmware updates, parts, supplies, resins, and more please visit <http://www.epaxdental.com/>.

Customer Support Email: [support@epaxdental.com](mailto:support@epaxdental.com)

Join us on our Facebook group for active discussions and knowledge-sharing:

<https://www.facebook.com/groups/epaxdental/>



## PLEASE READ:

- When you find that a print has failed or there is solid residue in the resin vat, you must filter the resin in order to protect the LCD. Clean the resin in the resin vat by filtering out the solid residue using one of the provided filters or a paint filter which can be found online or at your local hardware store. If ignored, when the build plate dips into the vat, the force of the plate may crush residues, puncture the film and damage the LCD. This is a costly mistake.
- If there is residual resin in the resin vat or on the build plate's outer surface, please clean with a soft tissue soaked in IPA to avoid it dropping into the machine and curing inside.
- Always wear gloves, a respirator mask and protective goggles when handling liquid resin or a print before the post-processing. Only touch the print without gloves after it's been fully cleaned and cured!
- Print in a well-ventilated area. It is strongly recommended to use a vent fan drawing air around the printer to outside the building. Resin fumes can cause lung irritation!

# WARRANTY AND RETURNS

## WARRANTY INFORMATION

- New printers have a 1-year USA warranty that begins from the date you receive your printer. Our refurbished printers are backed by a 3-month warranty that begins from the date you receive your printer.
- Please note: The LCD screen, film, precut tape, filters, and resin are consumable technology which are NOT covered by this warranty. The warranty is also NOT valid for international (non-USA) orders due to high shipping costs. If you are outside USA, please consider purchasing from our distributors with warranty.
- All other components of the printer are covered by the warranty. In the event of defect, we will ship you replacement parts free of charge. It does not void the warranty for you to open your printer and perform maintenance. Our printers were designed to be user-friendly both inside and out.
- Warranty does not cover willful damages, tears and damages due to accident, normal wear and tear, improper care and misuse.
- If you wish to have us repair or perform maintenance on your printer for you, we are happy to do so. We will provide parts and labor, but you must cover the round-trip shipping costs from your location to our office in North Carolina, USA. You must also cover any parts not under warranty. You may use your preferred carrier.

## RETURNS AND REFUNDS

- If for some reason you decide our printer is not for you, simply contact us within 30 days from the date of your purchase. Return shipping must be covered by the customer. We can print a label for you, however, the cost of the label will be deducted from the refund.
- For unopened products, a 5% processing fee will be deducted from your refund to help cover a portion of our transaction and shipping costs.
- For opened/used products there is a 15% restocking/processing fee and if any parts/accessories are missing, the cost for those items will be deducted as well. Customer is responsible for ensuring a clean product is shipped back to us. Products that are shipped in poor condition (e.g. resin on a printer or still on the vat/platform) will have an additional 5% deducted from their refund.
- You may opt to receive your refund in the form of store credit. In the case of unopened products, the 5% processing fee will not be applied. In the case of opened products, the 15% restocking/processing fee will still be applied. Refunds are only given out once one of our technicians finishes inspection on the product.

**Visit our website at:  
[www.epaxdental.com](http://www.epaxdental.com)**