

# White Paper

## Indirect Bonding

This white paper will list and explain the process for placing braces on a 3D printed model by EnvisionTEC and creating a suckdown plastic retainer to place brackets correctly through indirect bonding.



Questions or comments:  
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The information and suggestions presented are to be viewed as aids. The intention is to be educational and is not a substitute for sound professional judgment. They are offered as samples for your reference only and are not intended to represent the only approach to any particular issue.



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After scanning the patient's mouth, the data needs to be prepared using 3D CAD software and converted to a .stl file format.

The ULTRA® 3SP™ Ortho and the 3-Dent™ are both recommended for the large-scale reproduction of accurate, functional orthodontic models. The recommended resin for 3D models to be used in the indirect bonding process is ABS 3SP™ White material printed in 50 microns.

ULTRA® 3SP™ Ortho



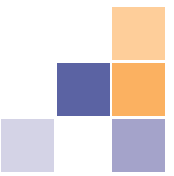
ABS 3SP™ White



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# Steps

Trigroup Technologies Siliform MSF, Clear Color  
 Trigroup Technologies Siliform RAS, Clear Color



3M Transbond XT



Dentsply Triad 2000™ Light Curing Unit



Thermoforming unit  
 Thermoplastic



Medium Body Regular Set  
 Super Hydrophilic Body Vinyl  
 Polysiloxane Impression Material



Rotating cutter or dental saw



Scissors

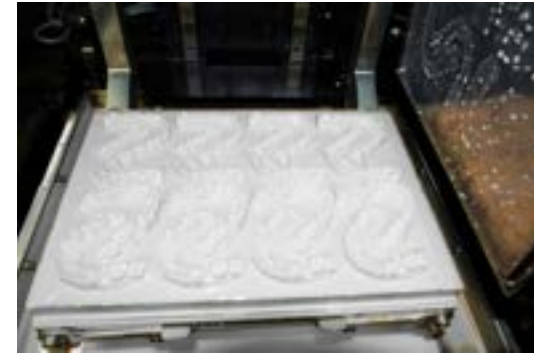


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Remove the build tray from the ULTRA® 3SP™ Ortho.



Gently remove jobs from platform using spatula



Place jobs in alcohol solution for 1 minute.  
Gently shake the container to help clean the parts.



Using a gentle air stream, dry the job completely.



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Using a gentle air stream, dry the jobs completely



Place jobs in Otoflash and set unit for 50 cycles (about 10 seconds).



Close the lid and press the start button.  
**CAUTION:** Do not use the Otoflash unit with the lid open.



## Indirect Bonding

### Indirect Bonding (IB) Instructions

Cure the model in the TRIAD 2000 for 3 minutes



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Apply 1 coat of Siliform MSF to the ABS 3SP™ White models. Allow the models to air-dry for 10 minutes.  
Apply second coat of Siliform MSF, and allow air-drying for another 10 minutes.



Apply 1 coat of Siliform RAS using a separate brush, and allow the models to dry for 10 minutes.



Direct-bond brackets onto teeth of the ABS 3SP™ White model using Transbond™ XT glue by 3M Unitek.



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Take the model with recently-glued brackets to the doctor to check.



If approved, cure the model in the TRIAD 2000™ for another 3 minutes.



Block out the hooks and spaces on the model using medium body regular set super hydrophilic body vinyl polysiloxane impression material.  
Apply the material to the bracket hooks. It will allow the brackets to disengage more easily from the retainer in later usage.



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Place the dental model in the center of the model platform on the right of the vacuum forming machine.



Place the Biocryl thermoplastic material on the pressure chamber. Fit the clamping frame in place above the Biocryl disc to secure it in the chamber compartment.

Swivel the heater forward so it is even with the pressure chamber below it.



Heat the thermoforming material for 20-30 seconds or until the surface begins to soften.

Once the thermoforming disc has been heated, swivel the heater back to its original position before flipping the pressure chamber over the top of the model on the right-hand platform.



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Flip the pressure chamber compartment back left to its start position.

Remove the clamp handle to free the dental model.



Use a rotating cutter or dental handpiece to trim away excess plastic from the model.

Once the edges have been cut away from the retainer, soak it for 10 minutes in warm water.

If necessary, cure the model and retainer for 3 minutes in the TRIAD 2000.

Pop the retainer off of the model -- the brackets should remain attached.



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## Additional Tips

This best practice has been conducted successfully using ABS 3SP™ White material run on an EnvisionTEC ULTRA® 3SP™ Ortho.

The thermoplastic disc will be ready for the suckdown process when it begins to visibly ripple below the heater.

Once the bracket retainer has been removed from the EnvisionTEC 3D printed model, cut the edges and smooth them for safe application into the mouth.

The thermoforming unit used in this process is a Biostar unit, but any thermoforming machine will suffice.

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