Tips for better thermoformed splints

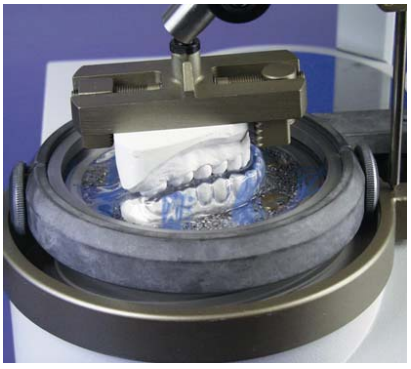
By Peter Herring, Adv Dip Dent Tech, ACCDP

Thermoforming has rapidly become the standard for quality splint production. While simple splints, such as orthodontic retainers, have traditionally been produced by employing thermoforming techniques, improvements in equipment design and materials over the past decade now allow for the thermoformed manufacture of virtually every permutation of splint design. The advantages of producing splints via thermoforming techniques include economy; speed of production; consistency of production; reduction of material usage; and minimization of methyl methacrylate use. In this article, we will look at the production steps and techniques that can make for better thermoformed splints.

Model Preparation

Tip: Design and survey the model prior to constructing the splint - this allows for more precise embedding of the model in the granules (embed to approx 5.0 mm below the finish line of the splint) and for identification and removal of excessive (undesirable) undercuts prior to thermoforming (Figure 1).

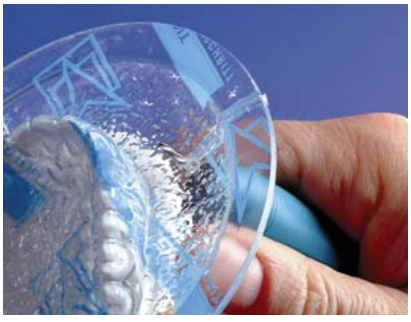
Thermoforming:



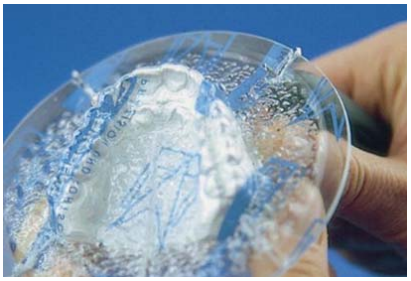
Tip: All thermoforming materials contract when cooling. Allow the splint to cool to room temperature in situ to gain the most precise fit. Splints which are removed from the model before full cooling has taken place can distort.

Tip: Thermoform at the correct time or temperature. Overheating the material can lead to degradation of it's properties making the splint "brittle" and less durable.

Removal from model



Tip: If the model has been correctly embedded within the granules and all undesirable undercuts removed it will be relatively easy to remove from the model after thermoforming.



Tip: To facilitate removal of the disc, cut towards the model at 5 intervals around the appliance with the appropriate fissure bur. Then remove the model with a swift vertical motion.

Finishing and polishing

Tip: Pragmatically avoid introducing excess heat! When polishing with pumice only apply light pressure and wet frequently. Heat from poor polishing techniques can lead to both local and overall distortion in the appliance.

Tip: Do not use steam to clean the finished splint. Soap and water should be used to remove the remnants of the final polish.

About the author

Peter Herring is a dental technician and prosthetist based in Perth, WA. He is a regular contributor to eLABORATE on thermoforming and is the Australian agent for Erkodent thermoforming machines. He also runs a busy laboratory dedicated to thermoformed appliances. For more information, call 1800-242-634 or email pjh@erkodent.com.au