

Individual impression trays

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Traditionally individual impression trays have been constructed using a wide variety of different materials - shellacs, compounds, self-cured acrylics and light-cured composites to name a few. However, all of these methods exhibit one or more fundamental failings by way of either dependence on personal techniques, OH&S issues or mechanical deficiencies.

In this article, we will describe the steps to quickly produce consistent individual thermoformed impression trays without the necessity for methyl methacrylate involvement and with minimal reliance on personal techniques.

Step 1

Trim the model to the deepest line of the vestibulum (Figure 1). Block out excessive undercuts and areas, such as freestanding teeth, which require additional relief with a moldable silicone gum (Figure 2). This material lets us quickly apply relief to the model, is reusable and also can be cleanly removed from the model after use, without causing damage.

Step 2

Lightly soak a circular foam spacer with water (8mm thickness for pressure machines and 3mm thickness for rapid vacuum units) and wring out the excess - this prevents the foil adhering to the foam. Position the model in the thermoforming unit and place the foam spacer on the model (Figure 3). At this stage, openings may be created in the foam foil to form tissue stops if required.

Following the manufacturers recommendations for heating time/temperature, form a polystyrene thermoforming foil (usually of 3mm thickness for upper trays and 4mm thickness for lower trays) over the foam spacer and the prepared model (Figure 4).

Each foam spacer will give a relief of 0.3mm to 0.5mm from the model and the texture of the foam structure will translate to the inner surface of the tray providing additional retention for the impression material (Figure 5).



Figure 1.



Figure 2.



Figure 3.

Step 3*

Trim the final shape with a fissure bur, then use a crosscut tungsten carbide bur to smooth the final form. Finish the edges with a course open structured finishing disc (Figure 6). Retention holes, etc, can be added at this stage (*Please see “Systematic Finishing of Thermoformed Appliances” eLABORATE September/October 2006).



Figure 4.



Figure 5.



Figure 6.



Figure 7.



Figure 8.

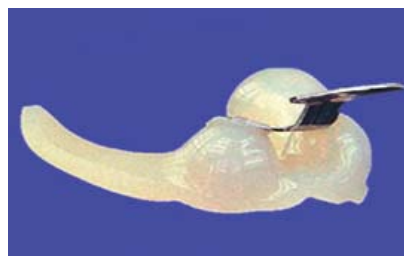


Figure 9.

Step 4

Tray handles can be, preferably, fixed by heating the handle over a flame and melting into the plastic base (Figure 7) or if necessary, affixed with cold cure acrylic.

Direct bonding handles are also now available which, with the appropriate bonding agent, allow a chemical weld directly to the hot foil at the same time as thermoforming (Figure 8).

The finished tray can now be used immediately (Figure 9).

About the author

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