

# Vacuum Forming Quick Reference Guide

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## 1. Getting Ready

First ensure the machine is turned on and ready to go, this can be done by flicking the orange switch on the left hand side of the machine.



Figure 1: Power switch in the "On" position

## 2. Vacuum Forming Prep

Place the male vacuum forming mold in the bottom of the tray, ensuring it is sitting on the release mesh.



Figure 2: Vacuum former with black release mesh

Figure 3: Vacuum former with mold insert

- i.) Placement of the mold is key. Placing it off centre, as shown in figure 3, where it is as far to the right as possible limits tears in the plastic, and keeps a consistent suction. However, this is dependent on the mould.

## 3. Choosing the right plastic

Different thicknesses and types of plastics have different properties. Thicker materials are stiffer, and stronger, while thinner materials are more lightweight and hold more detail. If you are unsure of what to use, 1.5mm HIPS is a good starting point. Ask a technician to get the material from the store room for you.

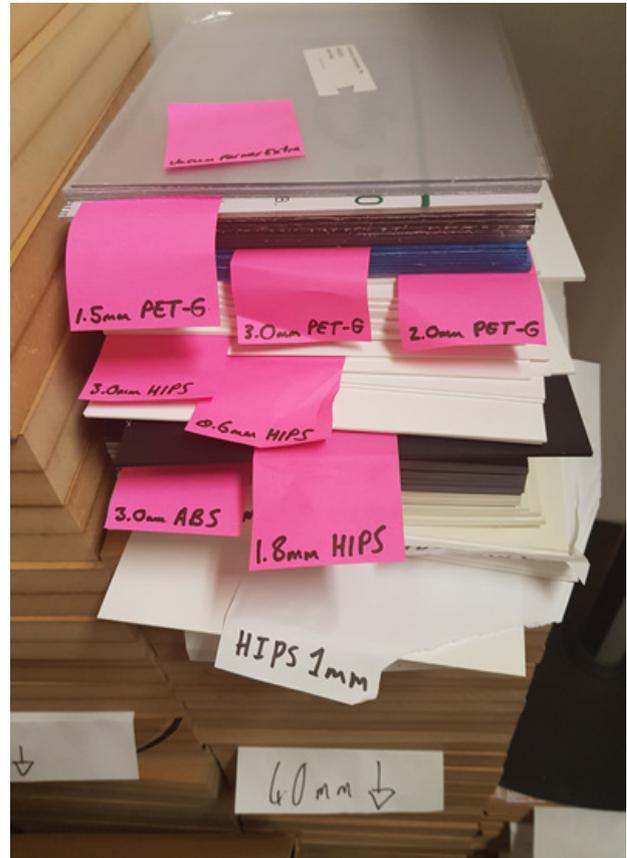


Figure 4: The extensive range of sizes and thicknesses of plastic we offer.

- ii.) Different plastics have different properties and traits.



## 4. Heating

1. Clamp down your chosen material to the foam pad, ensuring all protective films are removed before heating begins.
2. Pull the blue handle on the heating element forwards over the plastic, and watch heat from a viewing point between the heating element and the material. Slide the heating element back once the material has sagged approximately ~3cm on the second contraction
  - i.) When plastic is heated, it will sag initially, contract, then sag again. It is important this process occurs, so it can take the curves of the shape being formed more easily



Figure 6: Viewing slit between the heating plate and clamp

## 5. Vacuum Forming

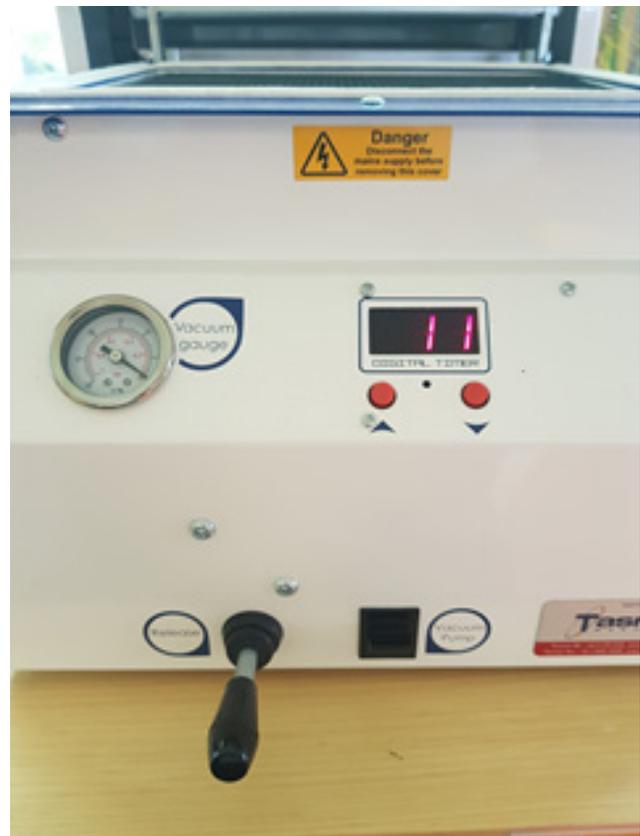
Slide the heating element back, pull the lever on the right hand side until it stops, and simultaneously flick the “Vacuum Pump” switch. Watch as the vacuum warps the plastic. Once it has taken its shape, turn off the vacuum pump and let the plastic cool.

- i.) The timer is a useful feature that allows for pieces of plastic to be heated the exact same amount of heat. If you are doing multiple molds, time how long the first one takes, and use that as a rough guide to achieve consistent vacuum forming success



Figure 7: A properly pressurised vacuum chamber, able to suck the plastic to form

Figure 8: The 3 switches clearly labelled on the machine, as well as the adjustable timer



## 6. Release

Pull the “Release” lever, and the vacuum gauge should read 0. Push the main plate lever away, to remove the mold from the plastic. Undo the clamps, then slowly lift the plastic out.



Figure 9: A successful vacuum form

## 7. Troubleshooting

Here are a few common problems, and solutions.

- i.) There is a lack of suction when the vacuum switch is turned on. Symptoms include the vacuum gauge staying at 0 (fig. 10) and an incomplete vacuum form (fig. 11)



Figure 10,11: a failed vacuum form, due to lack of suction

**Solution:** There is a vacuum leak somewhere, so make sure there are no tears in the plastic when it forms, and the main tray lever is fully pulled towards you.



Figure 12: The small tear that caused figure 10 to fail

- ii.) Folds in the plastic



Figure 13: Folds caused by excess heat

**Solution:** Heat the plastic less

- iii.) lack of detail



**Solution:** Use thinner material

