

# Pressure forming Data sheet

## Pressure forming techniques.

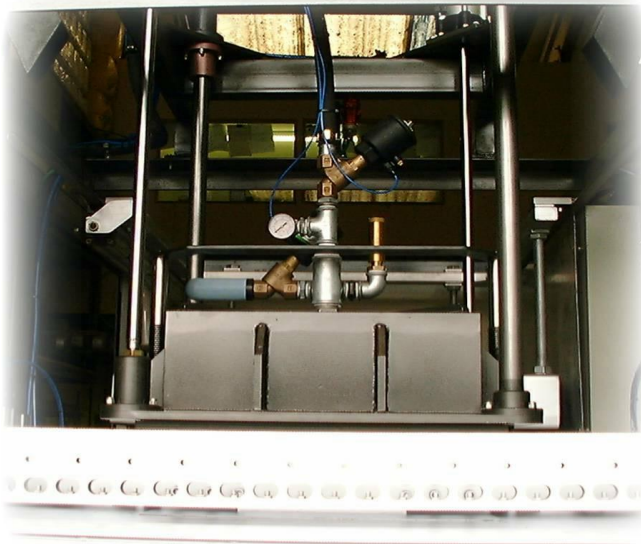
Why do I need to pressure form? Pressure forming gives a much higher definition on the product giving similar result to injection moulding.

Conventional thermoforming machines heat a sheet of material to a pliable temperature and then introduce a tool. At this point vacuum is applied to the tool forcing out the air allowing atmospheric pressure to push the material onto the tool creating the product shape, cooling then solidifies the product and the tool is removed. The pressure acting on the material is normally around 1 bar. (Atmospheric pressure around 1013 mbars)

Pressure forming uses the same principles but has an additional pressure box mounted to the upper platen. During the movement of the tool into the material the pressure box is lowered over the tool and the upper platens is locked together with the lower. This prevents the pressure from forcing apart the two platens. During the vacuum cycle air pressure up to 3 bars (about 40 PSI) is pushed into the pressure box and acts directly on the plastic. This has the effect of giving extremely high definition products. It also allows for forming at slightly lower material temperatures.

Pressure box in the down position over the tool

Pressure box raised showing two locking pins



The loads created in pressure forming can be very high. In the example above the aperture was relatively small 610x610mm maximum. This created a force of around 11,300 Kilograms @ 3 bars. At this load we can use a pneumatic wedge lock system to lock the platens together with up to four locking points

On larger machines the load can increase substantially. A 1200x1200mm machine would create a force of around 43,300 Kilograms @ 3 bars, so it is necessary to use hydraulic cylinders to keep the integrity of the system.

The pressure box is code welded and pressure tested and comes with an inspection certificate. Safety valves are fitted to prevent over pressurization. Plug tools can be fitted inside the pressure box so it can be used as a conventional plug.