

Dome Blower

How to create plastic domes with the dome blower.

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What dome blower do we have in the workshop?

The 3D workshop has one CR Clarke dome blower 320 unit. It is used to create plastic domes.

Plastic sheets are first heated in the [plastic oven](#). Once hot the plastic sheet is fixed to the dome blower and air is blown into the hot plastic. The plastic then expands to form the shape of the dome.

The dome blower creates domes of 300mm, 225mm and 150mm in diameter. The height of the dome can be varied. The maximum height is the same as the radius of the dome. If you try to blow a dome taller than it is wide the dome will become stuck in the machine.



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How do I book the dome blower?

All students must book a workbench to be in 3D workshop. Booking a workbench for a 3 hour slot gives you a space to work and access to all necessary tools, sundries and equipment with technical supervision and guidance.

We will only be accepting booked appointments to comply with social distancing guidelines. No walk ins will be accepted.

You can book a workbench via the [Online Resource Booking \(ORB\)](#).

You must complete an online Health and Safety induction before booking a workbench.



The dome blower is a yellow machine. This means students can use the equipment but must get staff approval before each use. A member of staff will also supervise.

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What materials can I use with the dome blower?

3mm [acrylic](#) is the best material for dome blowing. This is because acrylic has excellent elastic characteristics. Acrylic can be purchased from the 3D workshop. Prices are available on the [eStore](#). Acrylic is available in a wide variety of solid and transparent colours, colours and clear.

[Styrene](#) sheets can also be used but the surface of the dome will be bumpy and uneven.

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How does the dome blower work?

Before starting you need to prepare your material. The plastic sheet should be cut to a circle slightly larger than the size of the dome you are creating. Always check the sizes of the example domes in the workshop to check which size you should use.

- For a 150mm dome you should cut a 200mm circle
- For a 225mm dome you should cut a 275mm circle
- For a 300mm dome you need to cut a 350mm circle. At this size a square will not fit in the dome blowing unit. **Acrylic** can be **laser cut** to create a circle. **Styrene** will need to be cut into a circle using the **bandsaw**.

When using the dome blowing unit the plastic sheet needs to be heated up first. This is done in the **plastic oven**. After 10 minutes the plastic should be hot enough to be formed into the shape of a dome.

The hot sheet is then fitted into the dome blowing unit. Air is then blown into the hot plastic until it reaches the desired height. The machine takes its air supply from the vacuum forming machine nearby. A height gauge is fitted to machine, this can be set to the desired height.

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How do I use the dome blower?

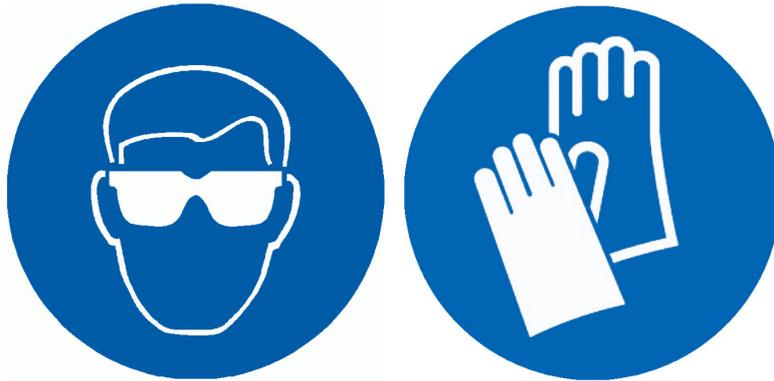
To use the dome blower:

1. Ensure you are wearing correct **PPE**.
2. Ensure the extraction hood is open and positioned above the machine.
3. Prepare your sheet of plastic as described above.
4. Heat the plastics oven to 165 C°
5. Prepare the dome blower to the desired size and height using the sizer rings and the height gauge. For a perfect half sphere this needs to be half the size of the diameter plus 6mm. For a 300mm dome set the height gauge to 156mm. Use a measuring tape to do this.
6. Heat up the acrylic in the plastics oven for 10 minutes.
7. Once it is hot transfer the plastic sheet to the dome blower wearing thermal gloves. The plastic will stay hot for around 30 – 60 seconds so you must work quickly once it is removed from the oven. If the plastic cools you will not be able to form the dome.
8. Place the plastic sheet centred onto the silicone rubber pad.
9. Lock the facing front and rear clamps at the same time. The forces required to clamp are opposing and the process can be achieved quite smoothly.
10. Switch on the pump on the vacuum forming machine, which supplies the air, and press the blow button.
11. Hold down the blow button until the top of the dome is 6mm below the height indicator.
12. Release the blow button and the dome will cool down.
13. Once cool unclamp the dome and remove from machine.
14. When finished turn off the machine and leave clean and tidy.
15. If you want to trim the border this can be done on the bandsaw and sanding machine.

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What Personal Protective Equipment (PPE) do I need to use the dome blower?



You must wear safety glasses and heat resistant gloves when using this machine. Tie back any long hair and tuck in loose clothing.

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