3D Printing – ProJet 1200

The **ProJet 1200** 3D printer is suited to smaller 3D prints requiring fine detail with a maximum print volume of 43 x 27 x 150mm. If you need larger prints, consider using the Ultimaker 2 3D printer.

Both 3D printers are located in the **ABVenture Zone** on the 8th floor of the MacRobert Building. If you would like to use a 3D printer, please contact abventurezone@abdn.ac.uk or call 4364.

**Warning:**
- Do not move the printer when a liquid resin tray is inside, as this will damage the printer.
- Always wear **protective gloves** and **safety glasses** when handling the liquid resin material.
- If the resin comes in contact with skin, wash thoroughly with soap and water.
- If the resin comes in contact with eyes, rinse thoroughly for 15 minutes, removing contacts lenses if safe to do so.

**ProJet 1200 layout**

![Closed view of ProJet 1200](image1)

- a. LCD display
- b. Print chamber door*
- c. Curing chamber door*

![Open view of ProJet 1200](image2)

- d. Print platform clamp lever
- e. Print platform
- f. Print cartridge support
- g. Material cartridge clamp lever
- h. Curing chamber carousel

*Both doors have magnetic catches that you can pull open from the top corner, or push firmly in the centre of each to release the catch.*
Select your resin material

There are a number of different VisiJet FTX resin materials for the ProJet 1200. These are:

- **Green** Tough, curable plastic. This will be what you generally print with
- **Gray** Primer grey general purpose
- **Clear** Transparent, tough
- **Gold** Metallic gold appearance
- **Silver** Metallic silver appearance
- **Cast** Wax/plastic hybrid for delicate castings

You can store material trays for future print jobs. The storage area should be in a cool, dark environment, away from any light. If not, the liquid resin will harden and cure.

Prepare the ProJet 1200 to print

1. Make sure you are wearing **protective gloves** and **safety glasses**.
2. Check that the printer is positioned in the location where you want to use it.
   **Note:** Do not move the printer once a liquid resin cartridge is inside.
3. Open the **left** print chamber door.

4. There are two areas that you need to set up.
   - **a** The **print platform:** This is where your model prints.
   - **b** The **material clamp:** This is where you insert the resin material cartridge.

Set up the material clamp (label b)

**Note:** You may not need to do this if a cartridge is already in place and it suits your requirements.

1. If a cartridge is already in place, open GeoMagic on the PC and click the **Help** tab, then **Check Cartridge**.
2. If a cartridge is not in place, or the existing cartridge is empty, lift the material clamp upwards so that it is in a raised position.

3. Unpack a material cartridge removing it from the outer cardboard box and tear the foil bag at the tear line. The cartridge also has a foil cover, do not attempt to remove the foil cover at this point.

   **Note:** Check that the cartridge has not leaked. If so, do not use it.

4. Insert the cartridge into the ProJet **under** the material cartridge clamp, making sure it is set correctly in its pocket.

5. Press down on the material cartridge clamp to lock it in place.

   **Note:** Leave the foil on until the PC completes its checks.
6. Open **GeoMagic** on the PC and make sure it has detected the ProJet printer in the bottom right hand corner of the screen.

7. If not, click the **Home** tab, then **Printer**.

8. Add the printer, then close and reopen **GeoMagic**.

9. Click **Help**, then **Check Cartridge** to ensure the printer can read the cartridge.

   **Note:** If the print cannot read the cartridge, open the chamber door and check that the cartridge is correctly positioned and clamped in place.

10. Slowly pull back the foil cover, removing it completely.

11. Close the left print chamber door until you are ready to set up the print platform.

**Set up the print platform**

1. Open the left print chamber door.

2. Lift the top print platform clamp upwards.

3. Pick up the print platform by the metal tab. This image shows the view from above.

4. Insert the metal print platform so it is seated correctly below the raised clamp.

5. Lower the clamp to lock it in place.

6. Close the left print chamber door.

**Load and print your project file**

1. Open **GeoMagic** on the PC.

   **Note:** If this is the first time you have used the printer, you might prefer to print a test sample first, to familiarise yourself with the process. If so, click **Import** and browse to the
   
   C: Program Files > 3D systems > GeoMagic Print > Samples > Jewelry Sample Files > Matrix eternity band.stl
   
   This is a small ring and takes just under 30 minutes to print.

2. Click **Import** and select your STL file to load it into GeoMagic and it will appear on screen.

3. Click **Auto Arrange** to have GeoMagic centre your model and resize it appropriately. Click **OK** when prompted.

   • Click **Auto Support** to add support structures to help with the print.
   • Click **Manual Support** to add extra support or remove any on critical surfaces.
   • Click **OK** when prompted.
4. Click **Home**, then **Estimate** for an indication of how long printing will take.

5. Click **Home**, then **Print**. Confirm that the correct printer is selected. Click **Print** again.

6. Confirm that the print platform and cartridge are in place, then click **OK**.

8. Then, dip the model (attached to the platform), into a second (clean) bath for **90 seconds**.

9. Carefully pat dry the model (still attached to the platform) with paper towels.

### Wash the model

Once the print is complete, you will remove it from the printer and wash it in two **iso-propanol (IPA)** baths to remove any sticky material.

The baths are small plastic boxes that should be stored alongside the Projet 1200. One is labelled ‘dirty’, and the other ‘clean’. They may already contain iso-propanol from a previous use.

- **Dirty bath** This is the first bath you will use to remove most of the excess material and clean your printed model.
- **Clean bath** This is the second bath you will use to clean your model. Its contents are usually a clearer colour.

**Note:** Change the IPA in the baths after 12 uses.

1. Prepare the baths with 99% iso-propanol alcohol before removing the model.

2. Wearing gloves, open the left door.

3. The printed model will be attached to the underside of the print platform.

4. Under the model, have paper towels ready in one hand to catch any drips. This is to prevent a build up of spilled resin in the chamber.

5. Lift the print platform clamp and remove the print platform with model from the printer. Avoid touching the model at this point, as it will not be fully solid until cured.

6. Close the left print chamber door.

7. Dip the model (attached to the platform), into the dirty bath for **60 seconds**.

8. Dip the model (attached to the platform), into a second (clean) bath for **90 seconds**.

9. Carefully pat dry the model (still attached to the platform) with paper towels.

### Cure the model

Once you have washed and dried the model, you will need to harden and cure it using UV light.

1. Wearing gloves, open the **right**, curing chamber door.

2. Slide the print platform and model onto the metal carousel, under the metal spring clips.

3. Close the curing chamber door.

4. In the **GeoMagic** software, click the **Home** tab, then **Post Cure**.

5. Click **Start** to rotate the model, and switch on the internal UV light. Click **OK**.

6. Leave the model to cure for around **10 minutes**, then stop the cure.

7. Open the **right** curing chamber door.

8. Remove the print platform and model from the printer, then close the curing chamber door.

9. Carefully remove the model from the print platform using a razor blade.

10. Peel away any surplus material.

11. Make sure both chamber doors are shut.

12. In **GeoMagic**, click **Close**, then close the application and log off the PC.

### Further information and help

**Questions?** Log a call with the IT Service Desk:

- [https://myit.abdn.ac.uk](https://myit.abdn.ac.uk)
- [servicedesk@abdn.ac.uk](mailto:servicedesk@abdn.ac.uk)