XYZware User Manual

Announcement

Limitation of Liability Clause

Although it is our intention to produce a manual and product functions that are correct and stable, in no event shall XYZprinting be liable for any direct, special, indirect, incidental, consequential damages (including data loss of your computer). It is strongly recommended to backup or move your important data before using this software to prevent data loss and corruption.

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Printing History

Reprints of this manual's edition number may incorporate changed material since last release. Minor corrections and updates may be incorporated without changing the publication date or edition number.

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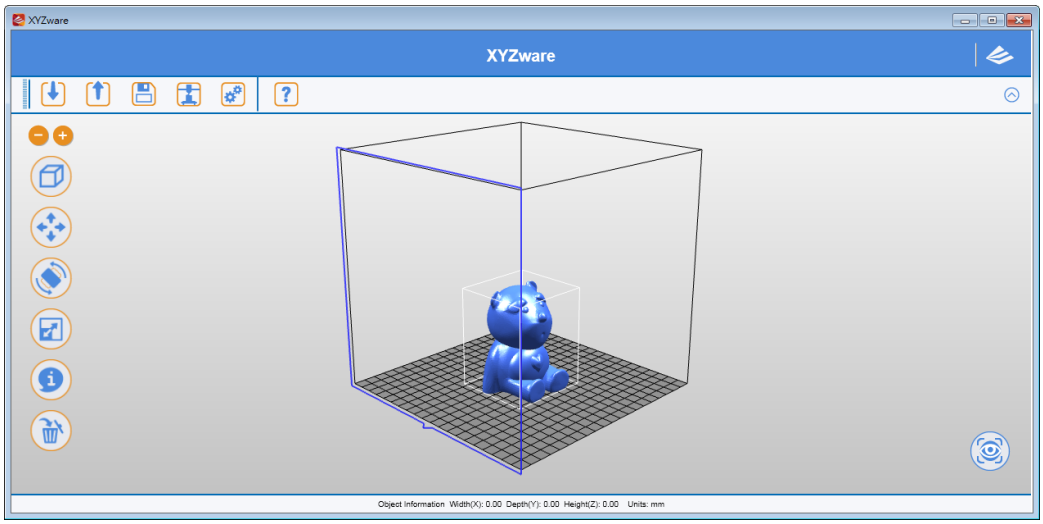
1. About XYZware



XYZware is a brand new application introduced by XYZprinting for designing, customizing and printing digital 3D Models. It can import objects in “*.stl” file format and create realistic simulated objects.

XYZware is also used with the da Vinci 3D printer series, introduced by XYZprinting to quickly print outreal products. XYZware removes the technical barriers of traditional production resulting in an enriched “Creative Life” for the modern Digital Family.

For Mac OS users
Mac OS users may find compatible software on the master CD supplied with the printer or the website.For information of latest version or technical support, please go to XYZprinting website:http://support.xyzprinting.com/

2. System Requirements

Please ensure your Operating System is compatible with the following requirements.

Software	Operating System	(PC) Windows XP (.Net 4.0 required) Windows 7 / Windows 8 above
		(Mac) Mac OSX 10.8 64-bit above
Hardware	Hardware Requirements	Minimum System Requirements: Memory: 512MB, Storage: 100MB or More Monitor Resolution: 1024 x 768
		Recommended System Requirements: Memory: 2GB, Storage: 500MB or More

Other Firmware and Other Third Party Software Considerations

Standard common VGA driver on a computer operating system or a graphics card that does not support OpenGL 2.1, may cause unknown error in XYZware.

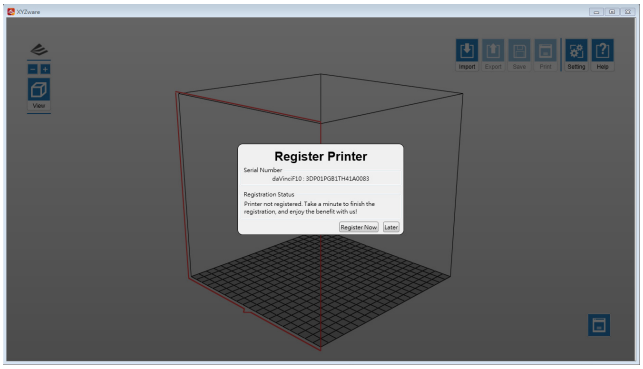
About .Net Framework

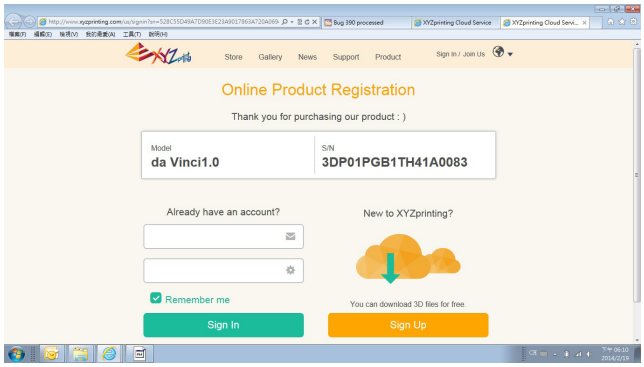
On a Windows operating system; XYZware software uses it to improve stability and smoothness. Our XYZware Beta testing has indicated that using older versions may cause install failure and/or software malfunction. It is strongly recommended that you use the latest available version; 4.0 and above. Please refer to the Microsoft website for more information about .Net framework.

Online Registration

XYZware software will request that you register your da Vinci 3D Printer 1.0 series when it is first connected to the PC. We recommend that you take the time to register your product. Periodic updates are made available through the XYZware software and the internet. Registration will permit any updates to complete automatically.

Step 1.On XYZware, press "Register Now"
Step 2.On the registration page in XYZware, fill in all required information to complete the process.





3. Installation Instruction

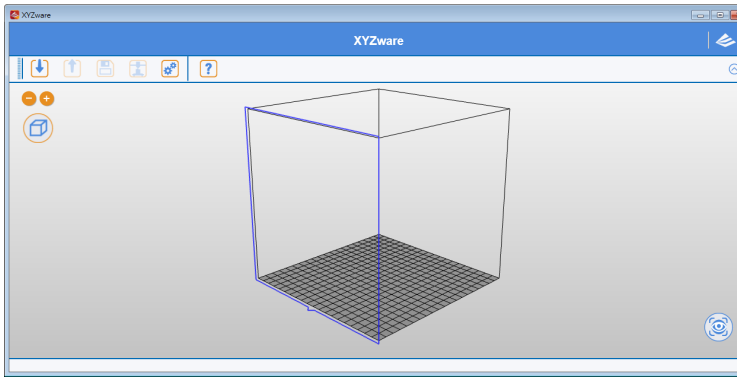
Before working with your printer, please first install XYZware. You can find the installer with the bundled disc. For additional information, system updates and technical support please refer to the XYZprinting online resources: http://www.xyzprinting.com

XYZware Setup Wizard will then appear on your screen. Please follow the on screen instructions to finish the installation.

(Setup.exe)

You can also setup the program manually. Open the file explorer and search Setup.exe shown below in your disc drive. Double click Setup.exe.

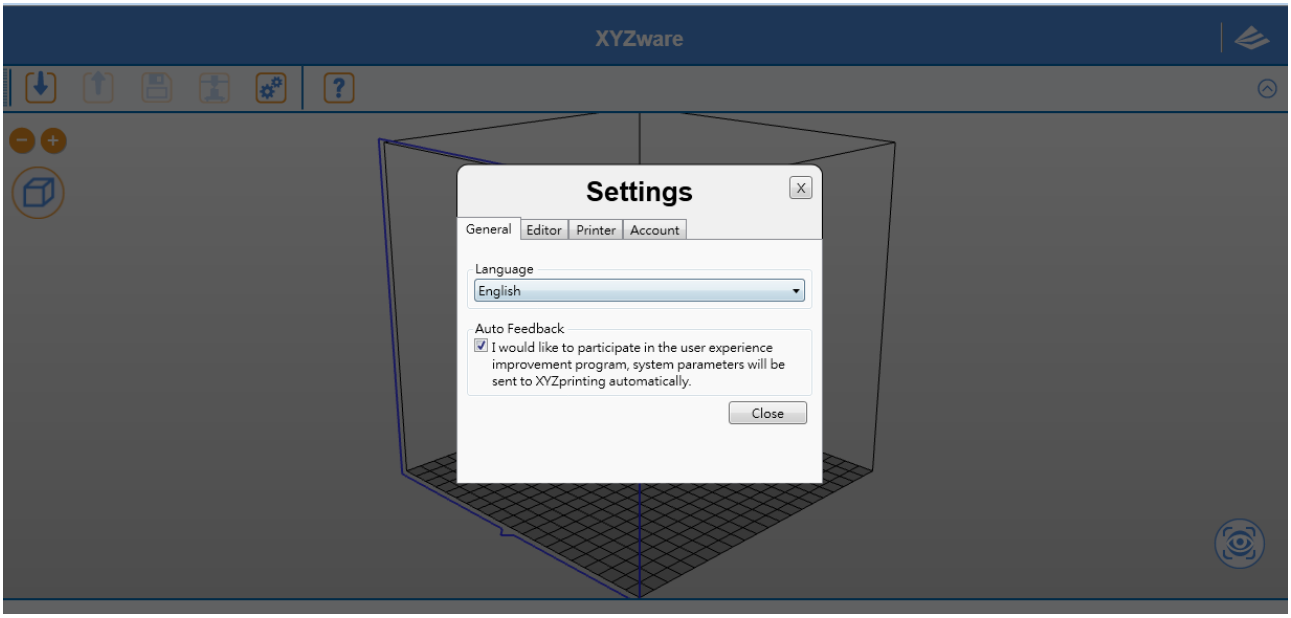
Congratulations! Your installation is complete! You can now launch XYZware from the desktop and start creating and printing.



4. Quick Start

Use this document as a guide to the 3D printing process. Before running the XYZware software on your PC; it is recommended to connect the USB cable from PC to printer.

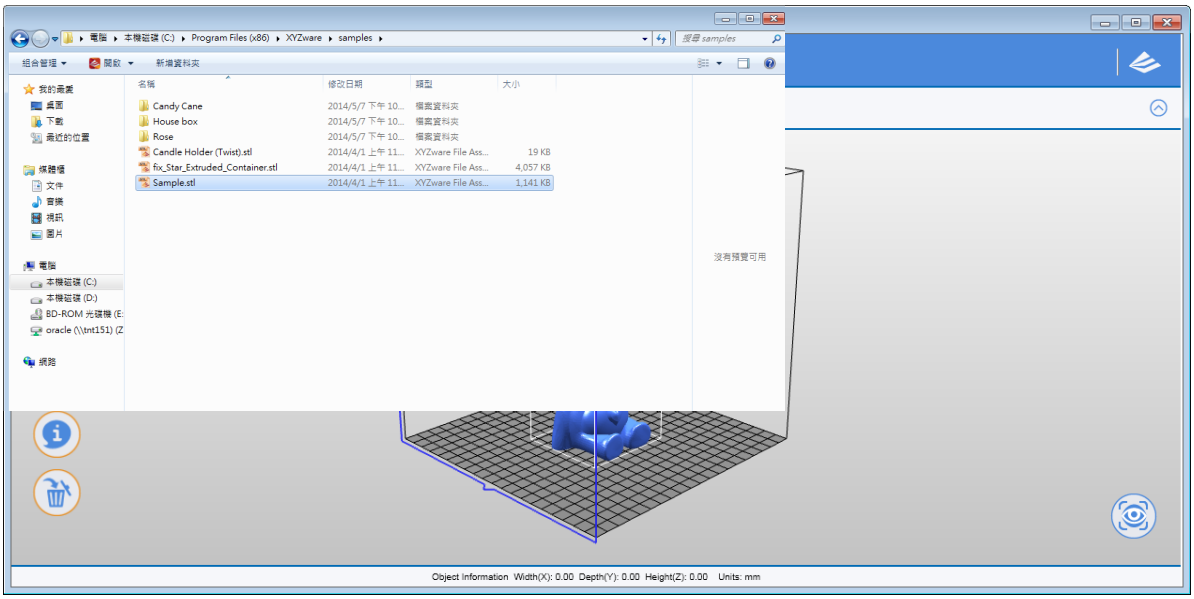
Before importing .stl file, it is advised to check the "Setting" on upper right side. You may select display language, printer type and other settings for a smoother operation. See "8. Setting and Update" for detailed description on Setting. The following is the demonstration of quick printing with da Vinci 1.0 seriprinter:

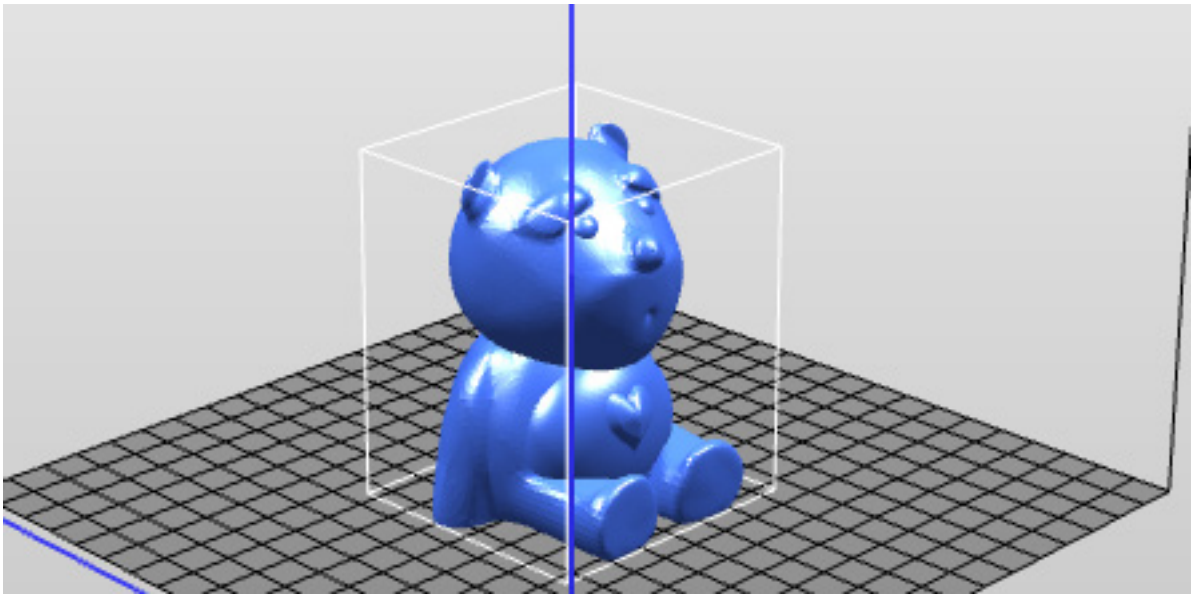


4.1 Print Single-Color Model(s)

Click on the “Import” icon to select files to be 3D printed. The following instructions use “Sample.stl” as an example on how to print your 3D object.

Print Your First Object

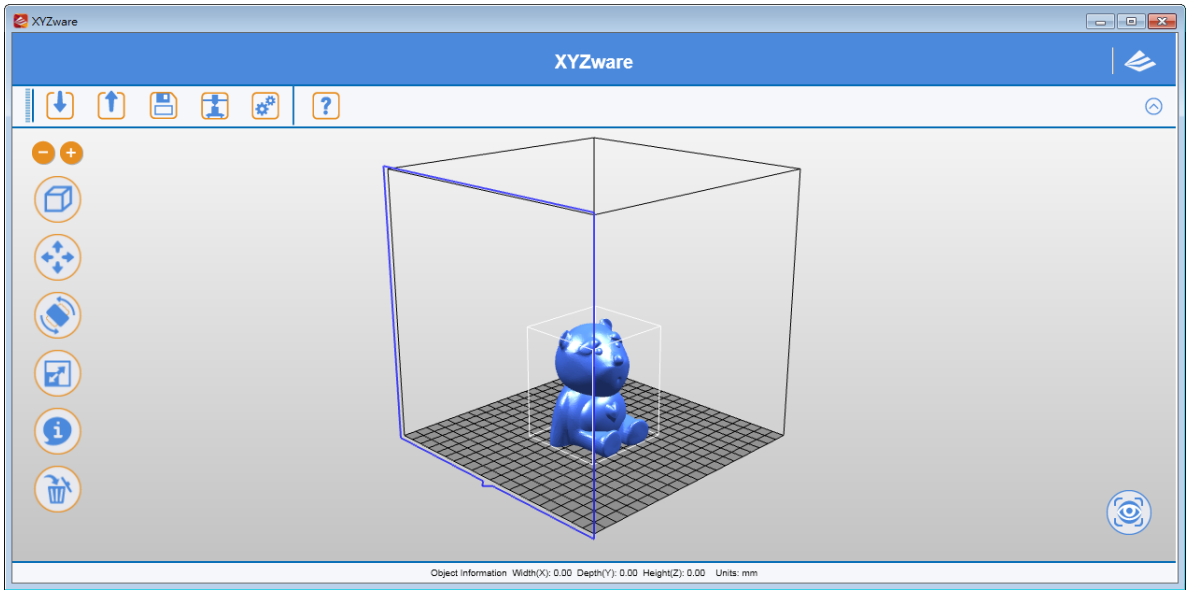




(Sample file: Sample.stl)

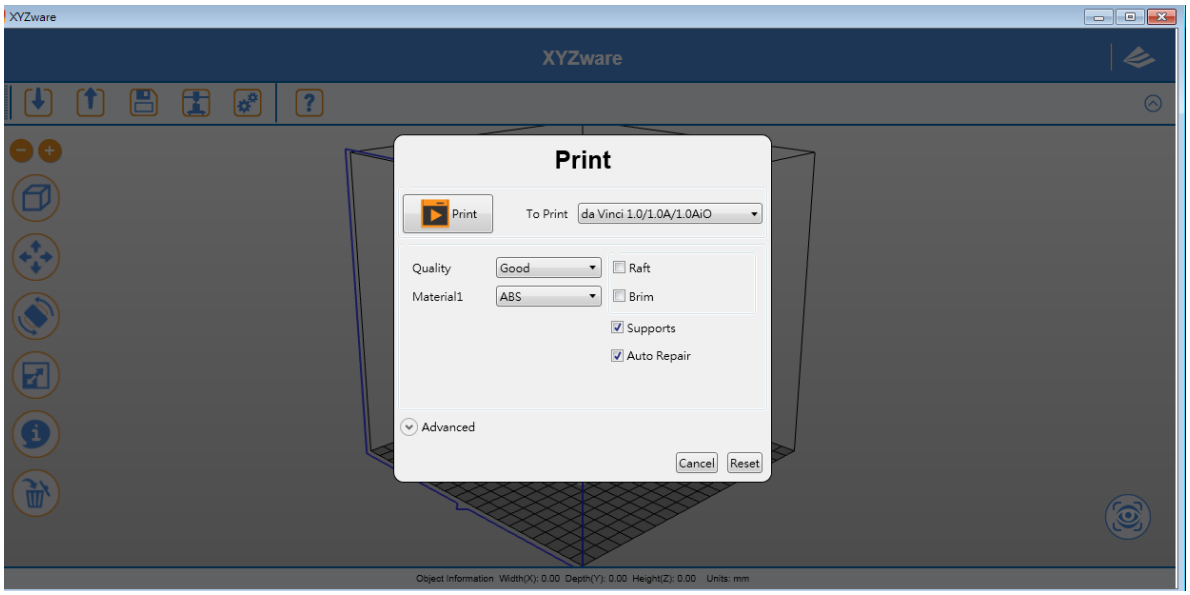
Edit and Adjustment

You can move, resize or rotate the object by using the icons displayed on the left hand side. Please refer to the next chapter “Functions” for detailed description.



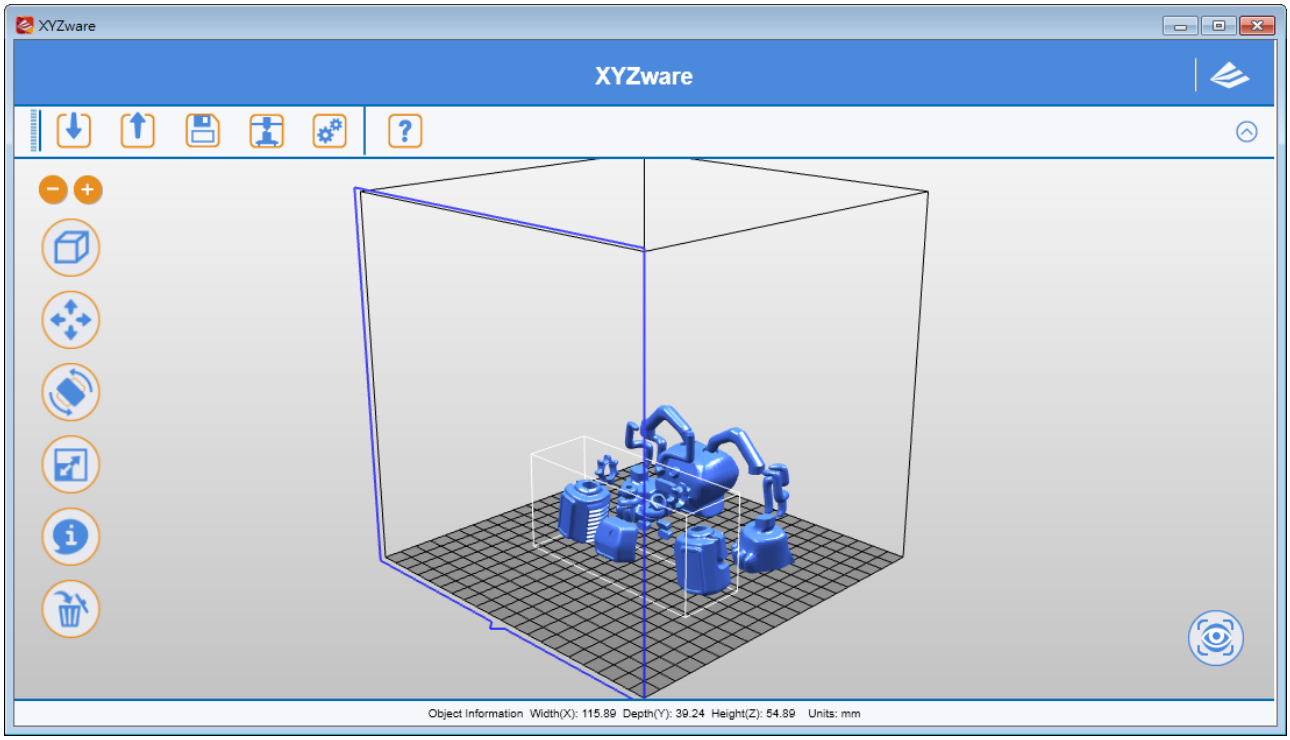
Printing Objects

After you have completed editing your object, click on the “Print” icon to prepare your file. The print settings can be changed to suit your requirements, for more details on this please refer to Chapter “Printing Setup”.

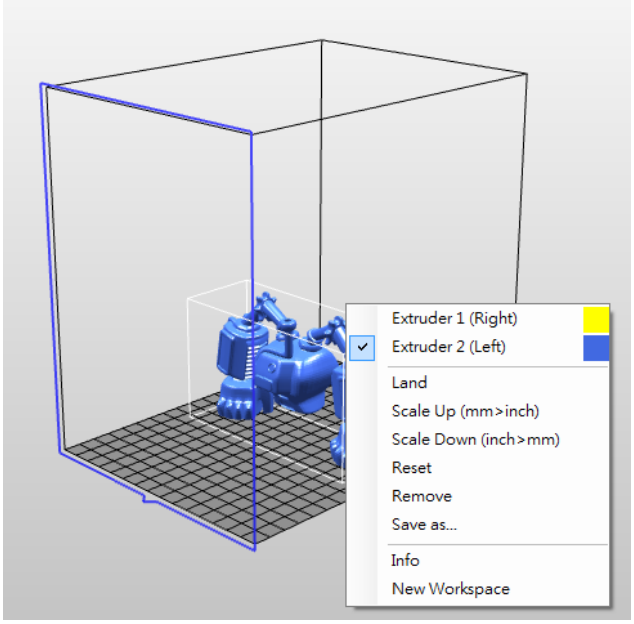


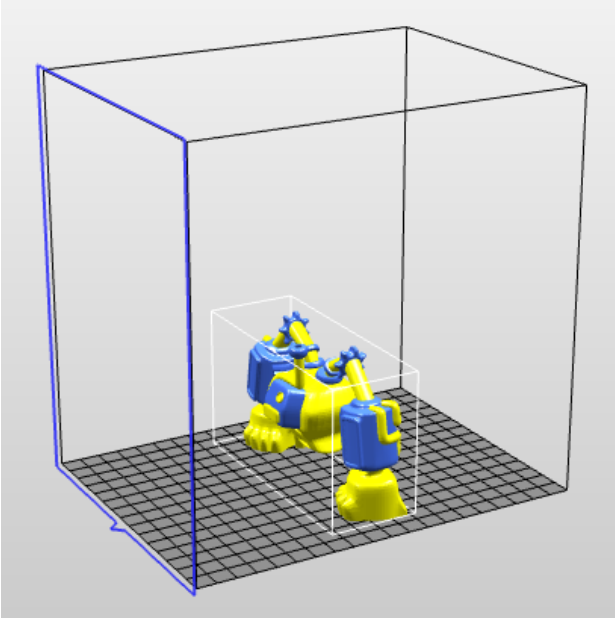
4.2 Print Dual-Color Model(s)

To print a dual-color model from da Vinci 2.0 Duo series, it is necessary to import 2 separated .stl objects that made up a complete model.



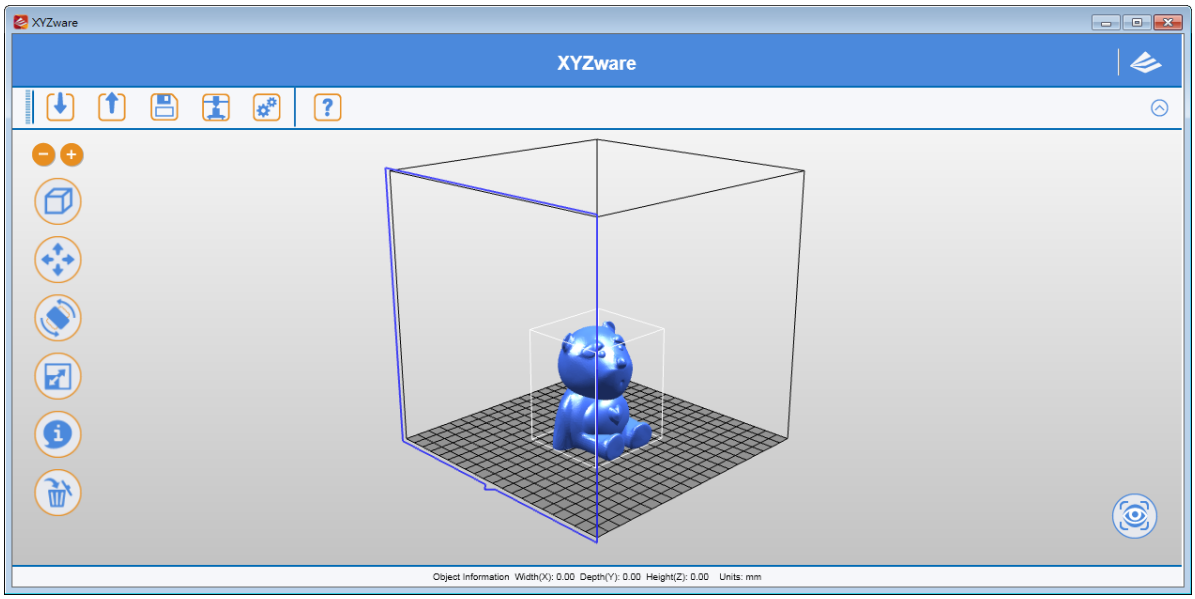
By default, all .stl files will be printed from extruder 1. You may assign one object to be printed from extruder 2.





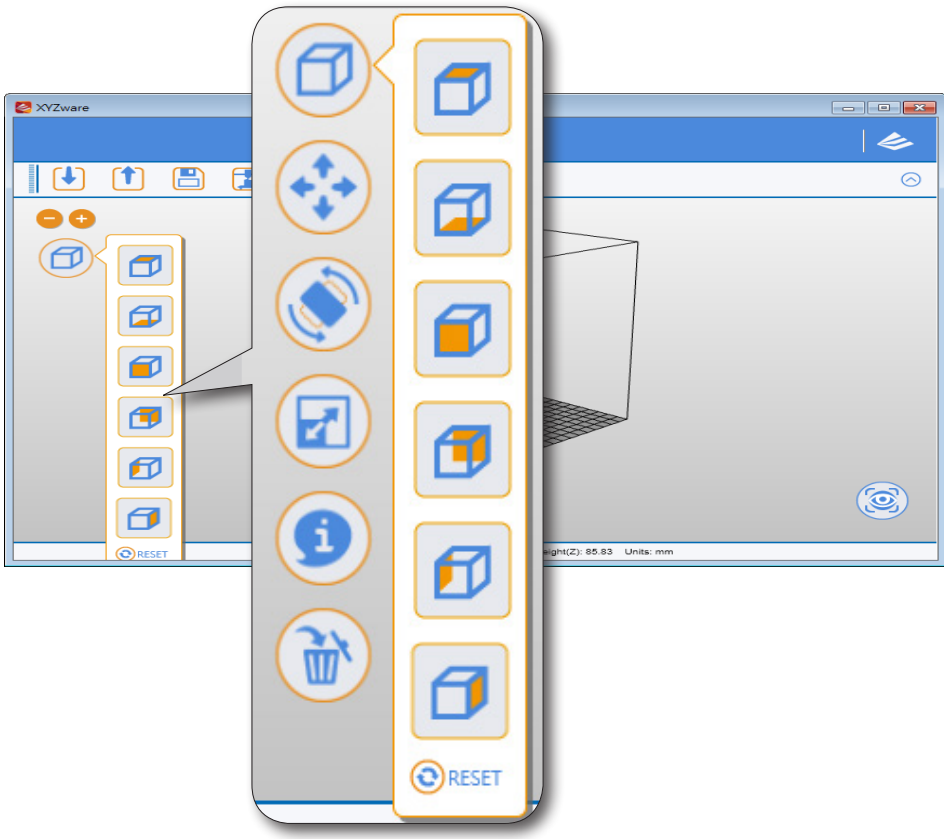
5. Functions

In this chapter we will explain the function of the icons on the left hand side.



5.1 View

Alternative: Switch the views by clicking and dragging the mouse.

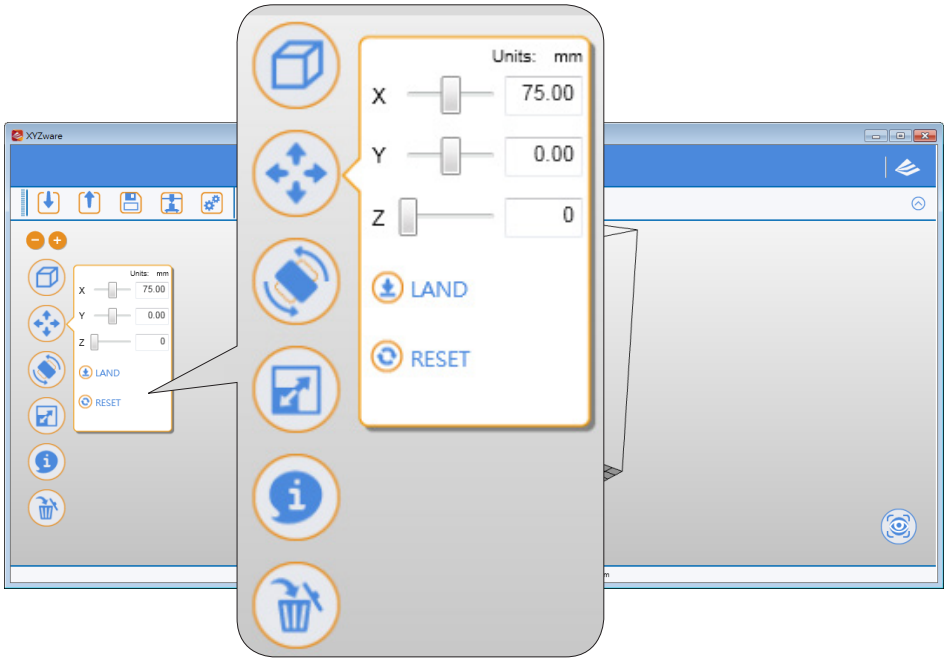


NOTE

You can view the object contents and structure from any angle

5.2 Move

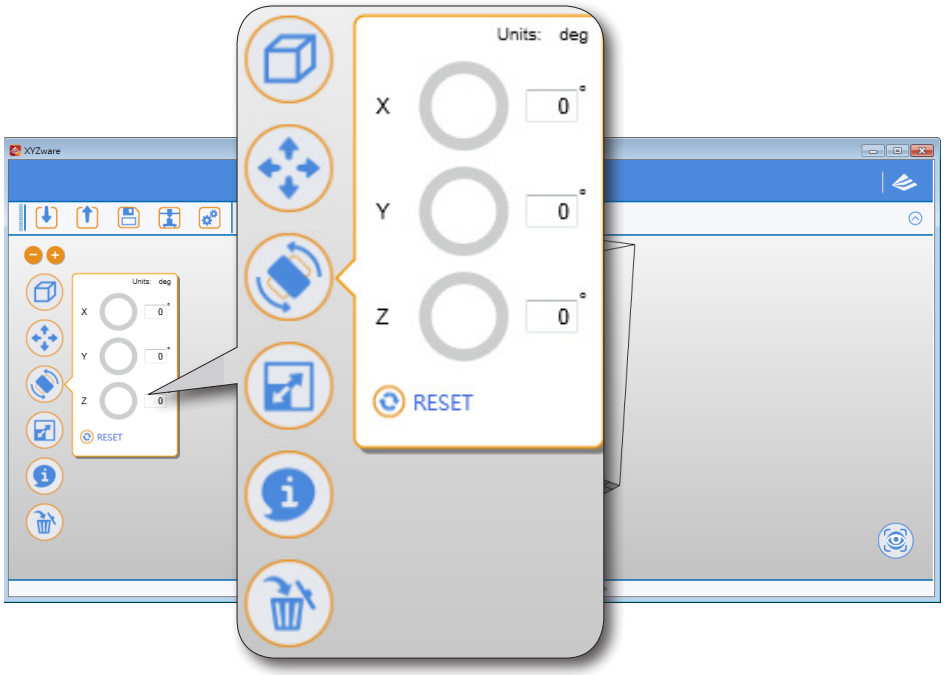
Alternative: Move the 3D object by holding ALT key, then click and drag the mouse.



NOTE

Adjust the value of the X, Y and Z axis to change the printing position of the object on the print bed.

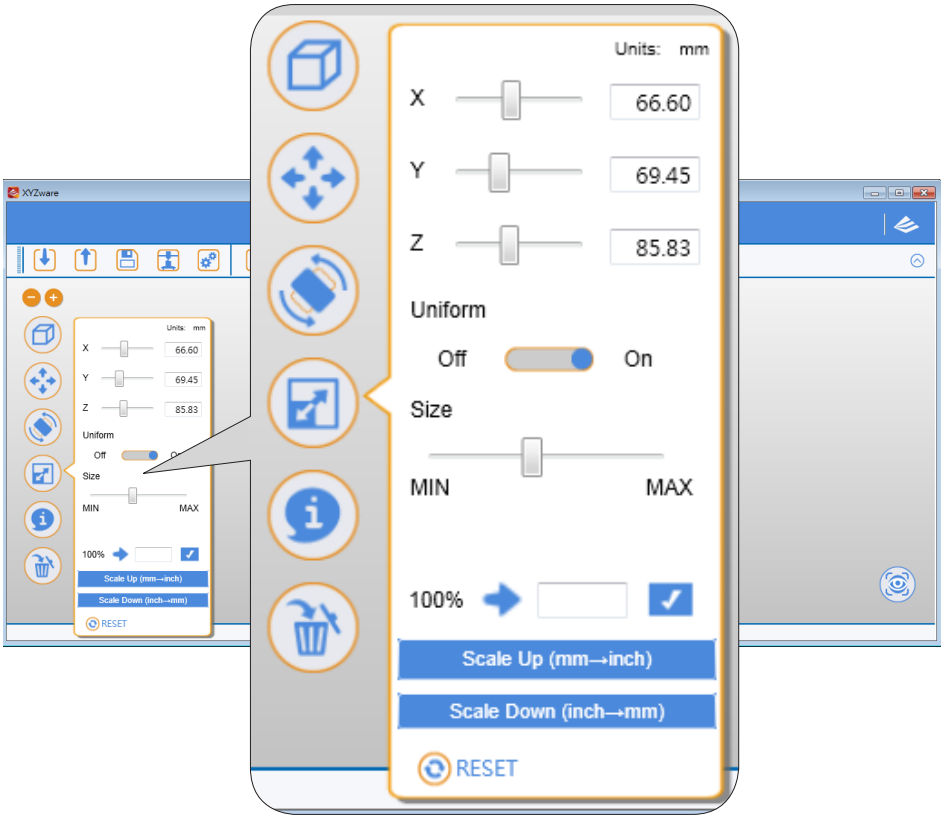
5.3 Rotate



NOTE

You may want to improve the quality of printing and the strength of the object. This can be done by increasing the contact area between the object and the build plate. Therefore, consider rotating and enlarging your object in order to achieve a better result

5.4 Scale

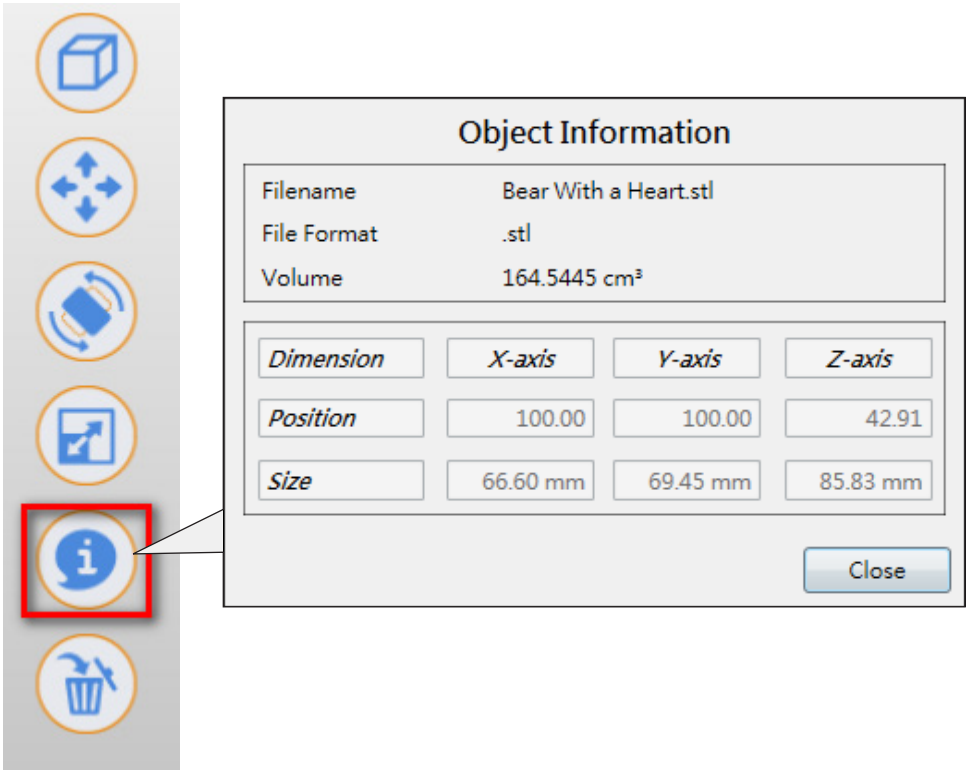


NOTE

The scale function allows you to enlarge or reduce the printing proportionally without affecting the original file.

5.5 Info

View info of .stl on da Vinci 1.0 print bed

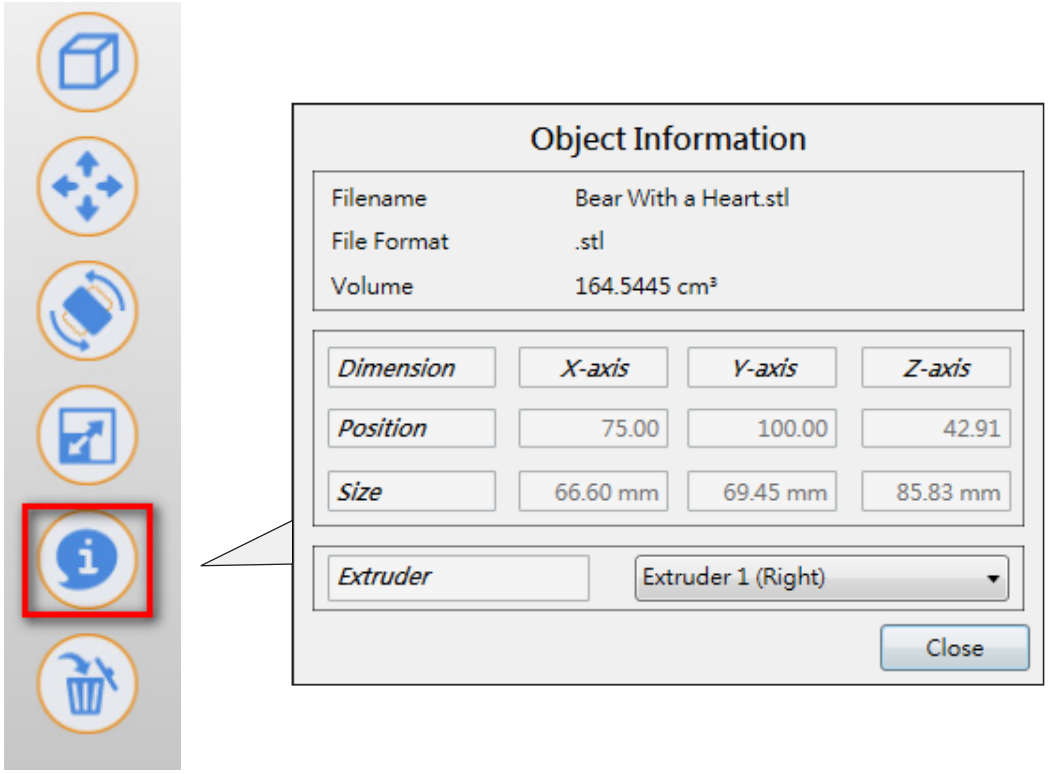


NOTE

You can find more information about the object size and position in the “Information” window.

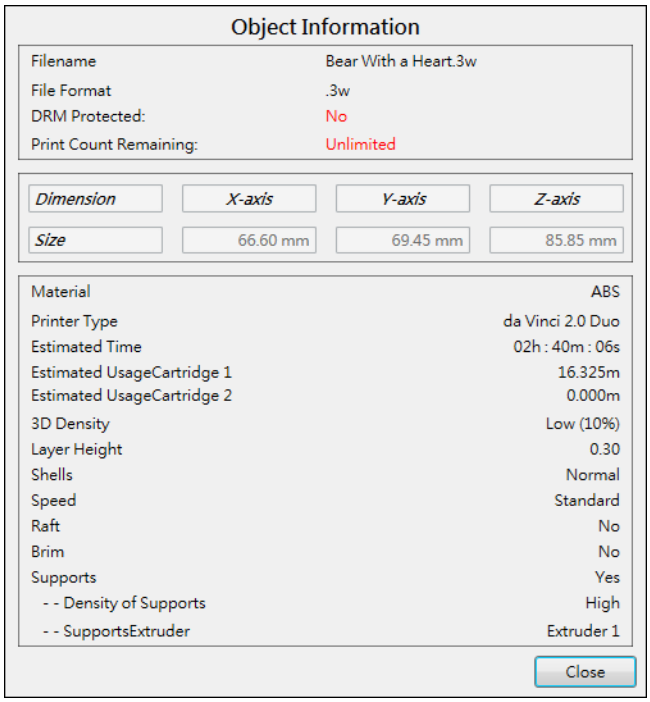
View info of .stl on da Vinci 2.0 Duo print bed

To reassign the extruder for output a .stl file, you may select the extruder in the window.

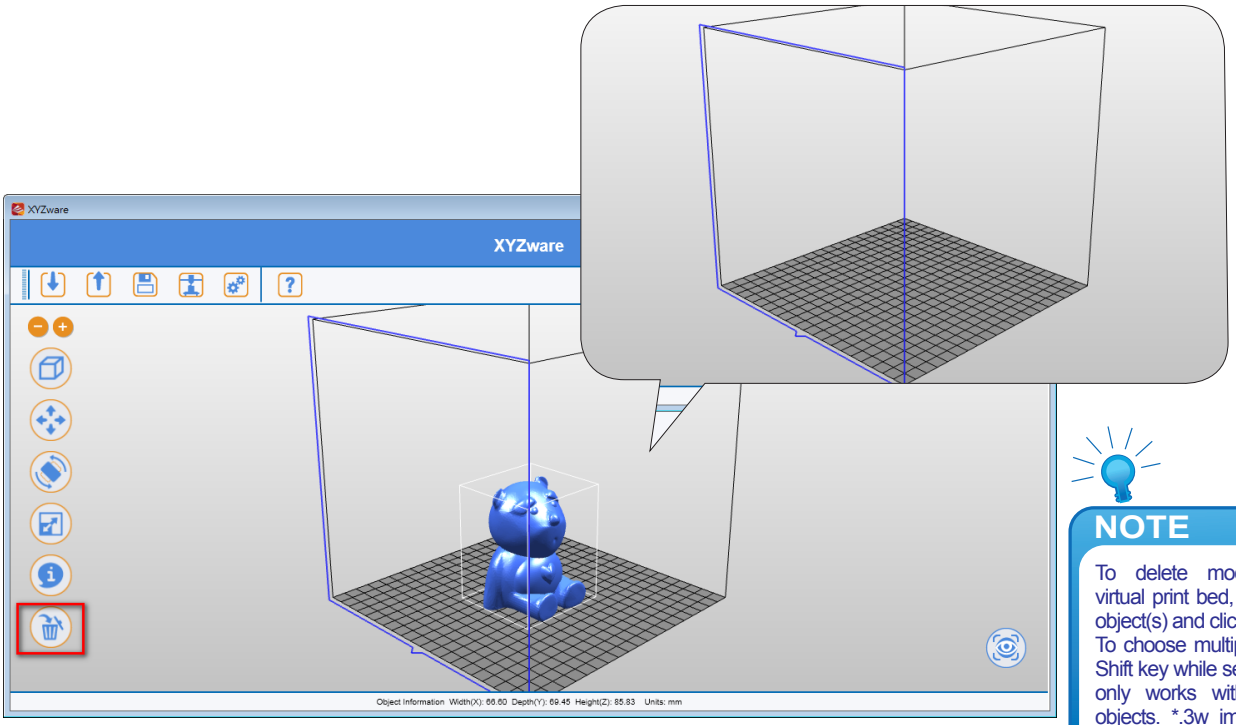


View info of .3w file

This window shows the printing settings while exporting the file. To change any printing settings of the file , please import the original 8.STL and export to *.3w with a new set of print preferences.



5.6 Remove

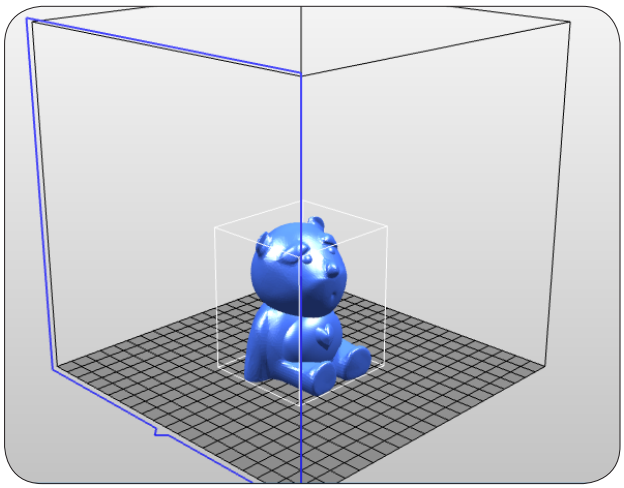


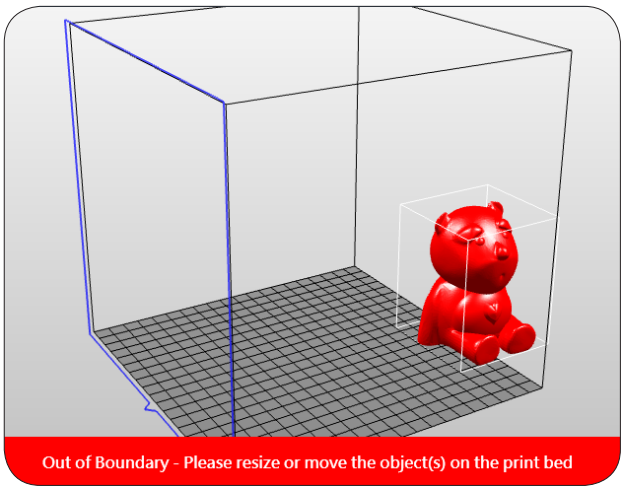
NOTE

To delete model(s) from the virtual print bed, simply select the object(s) and click "Remove".
To choose multiple objects, press Shift key while selecting. (Remove only works with STL imported objects. *.3w imports are locked and can't be removed.)

5.7 Reminder

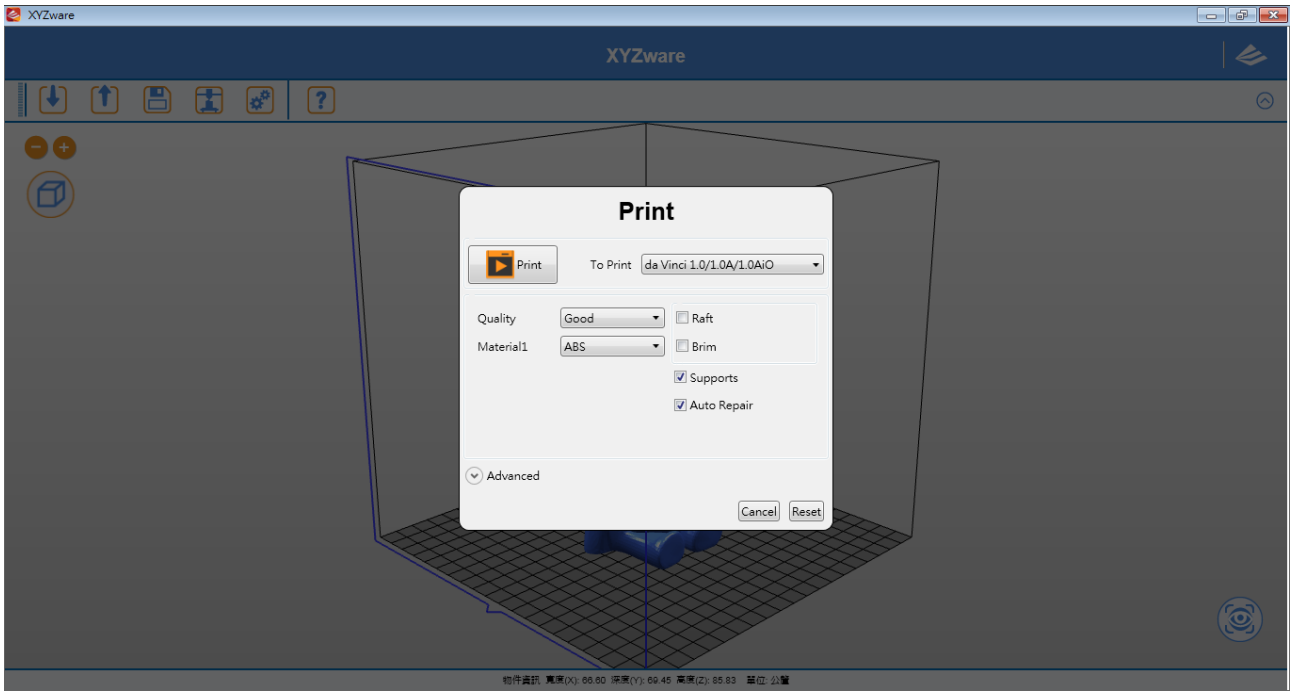
The XYZware will automatically find any inappropriately positioned object and mark it with a distinguishing color, this prevents the object from being printed off the print bed.





6. Print Setup

You can modify the printing results by changing the printing preferences. For example by setting the print speed to slow and checking the “Supports” box will result in a fine print quality.

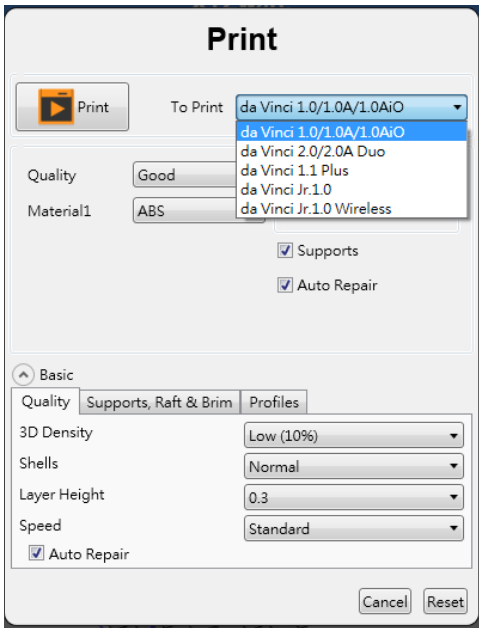


6.1 Print

Start object printing.

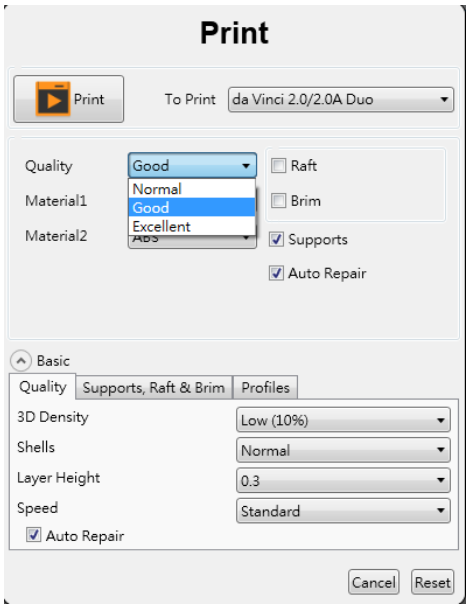
6.2 Printer

Select da Vinci 1.0 series or da Vinci 2.0 Duo series for output.



6.3 Quality

Print quality will impact the estimated time it will take for an object to print. For example, high quality prints will take longer to make than low quality prints as each layer printed is thinner creating a more detailed finish.

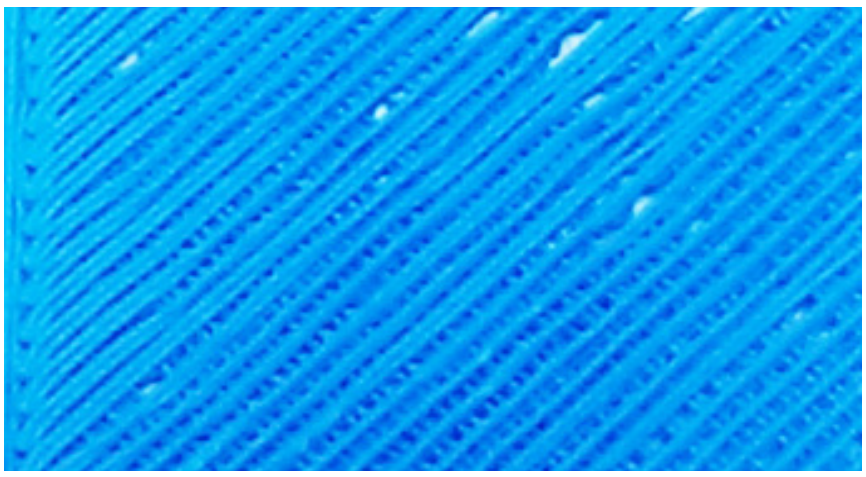


NOTE

Print Quality: Standard, Good, Excellent

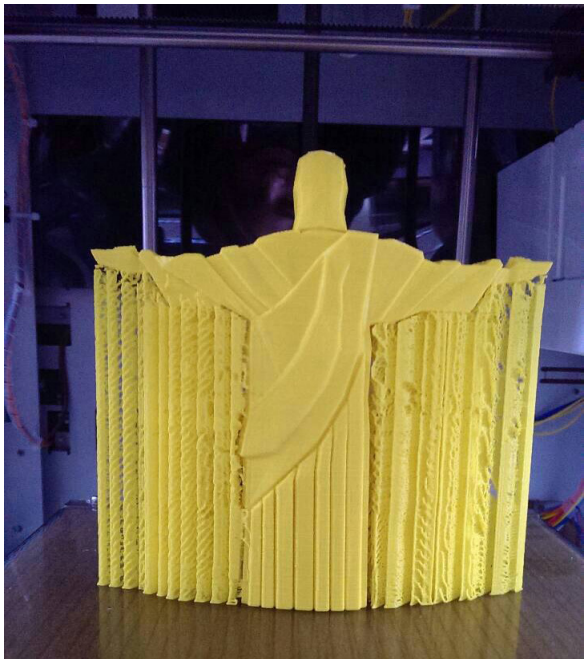
6.4 Raft

Printing thinner and longer objects require more attention due to the shapes physical instability, the object may buckle or twist under its own weight. When printing long thin objects consider increasing the area of contact between your object and the print bed by checking the “Raft” box. Rafts create stability and can be removed after your object has been printed.



6.5 Support

The supportive structures are printed according to the objects features. Support is used to create structural strength and ensure that your model does not collapse during the printing process.

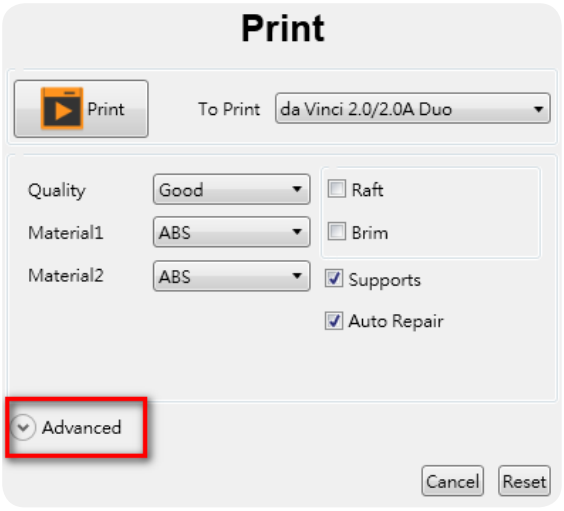


Model with support (rear view)

Support is removed

6.6 Advanced Settings

Click on the “Advanced” button for more printing options.



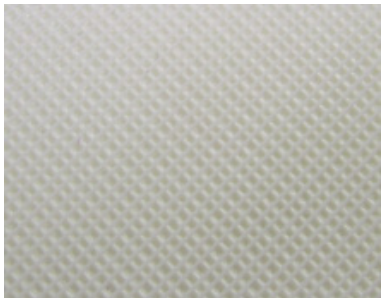
6.7 Profiles

Add or select saved printing preferences through the “Profiles” pull-down menu. Different printing preferences can be created, saved and applied to different models depending on the project requirements.

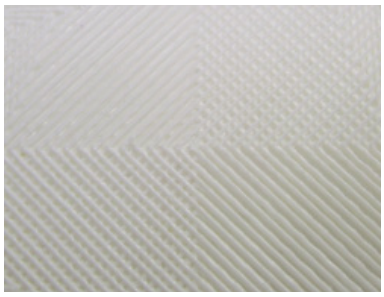
6.8 3D Density

Before printing, users may use this function to adjust the print density of the object(s). The default printer setting on the da Vinci 3D printer will create the internal structure of the object(s) based on honeycomb structures. Using the 3D density pull-down menu, you can adjust the honeycomb structure density from hollow to high to create desired strength requirements.

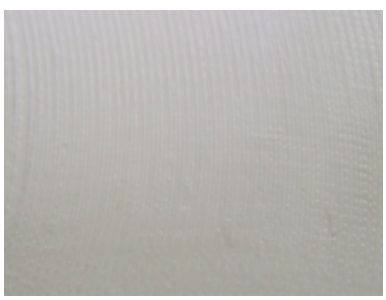
Low (10%) - this setting requires shorter printing time, but the structure is relatively weak. The setting is suitable for decorative objects.



Medium (30%) - The selection gives higher strength to the structure than low density. To print an object for mechanical purpose, it is advised to set the density to 30% or above.



High (50%) - For the object which should be durable or will be used as functional mechanical part, it is suggested to select higher density.



Solid (90%) - High dense object is more durable. However it takes longer and need more filament for printing.

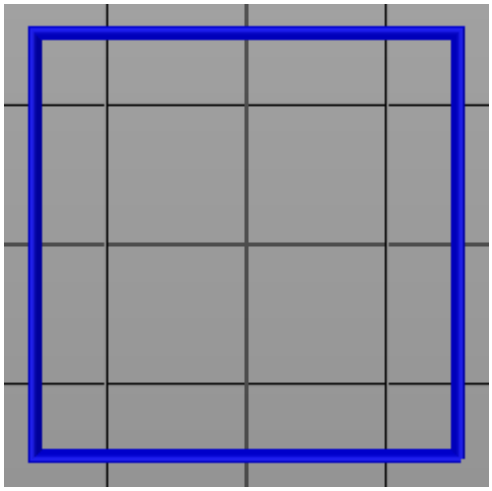
NOTE

Available 3D densities Hollow, fewest and scattered honeycomb structure Low Medium High Solid

6.9 Shells

Shells are the outer layer of the object. Thick shells end in better printing quality but take longer for printing. Thin shells shorten the duration of printing but may be vulnerable to break.

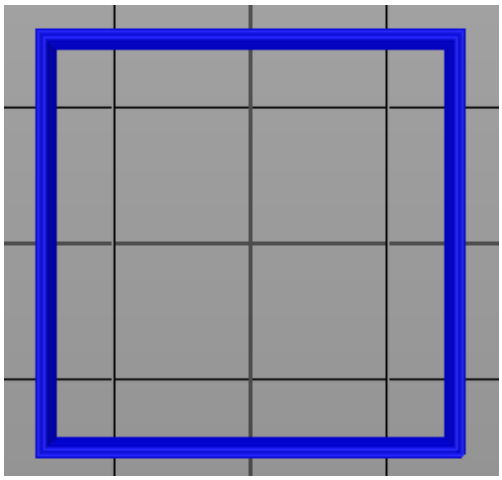
Thin: Single layer is outlined under the setting.



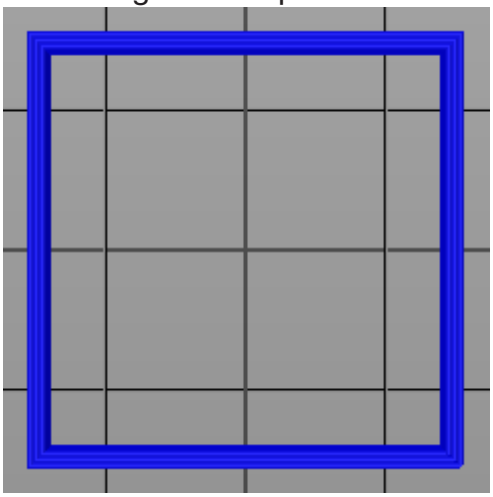
NOTE

Shell settings
thin
Normal
Thick,best quality

Normal: The outer structure is consisted of 2 layers. Extra layer strengthens objects.



Thick: Thick shell is made up of 3 layers. The strengthened structure is more sustain, but it takes longer for output.



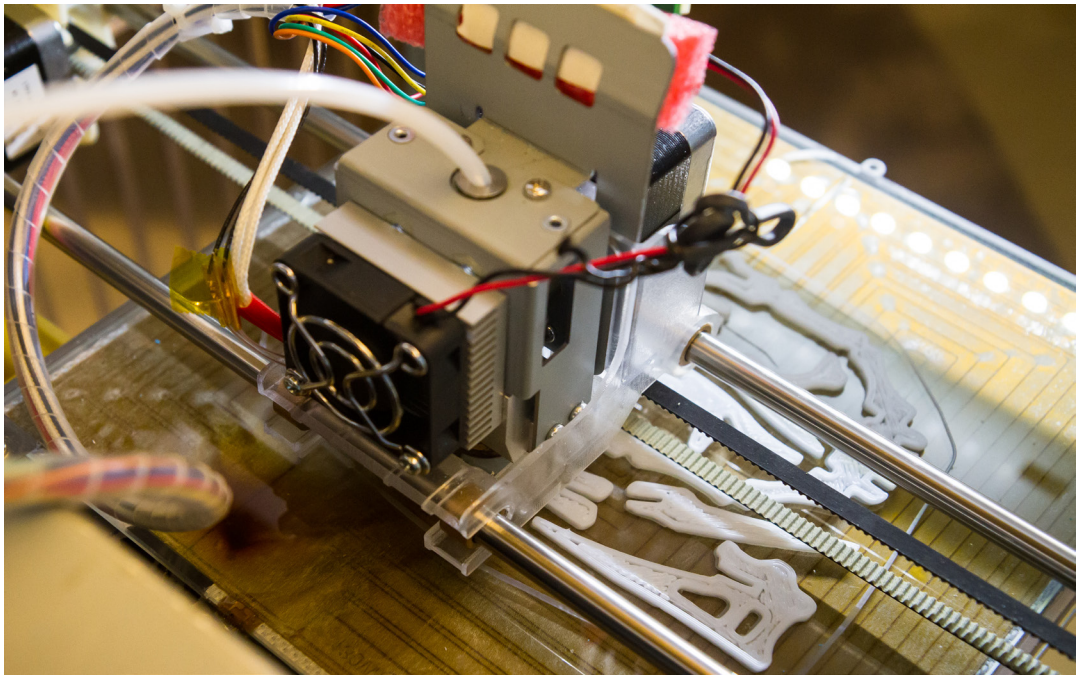
The strength of the object is affected by the setting of 3D density and shell. To ensure the sustainability of objects of different size, shape and purpose, different density and shell settings will be required.

Here are some suggestion on density and shell settings:

3D Density / Shell	Hollow (0%)	Low (10%)	Medium (30%)	High (50%)	Solid (90%)
Thin	Smaller, hollow display	Smaller, flat detailed display	Smaller, flat detailed, durable parts		
Normal					
Thick	Larger, hollow display	Large, taller display	Larger, durable parts		

6.10 Layer Height

By setting different layer heights, you can alter the thickness of each layer that your printer creates.

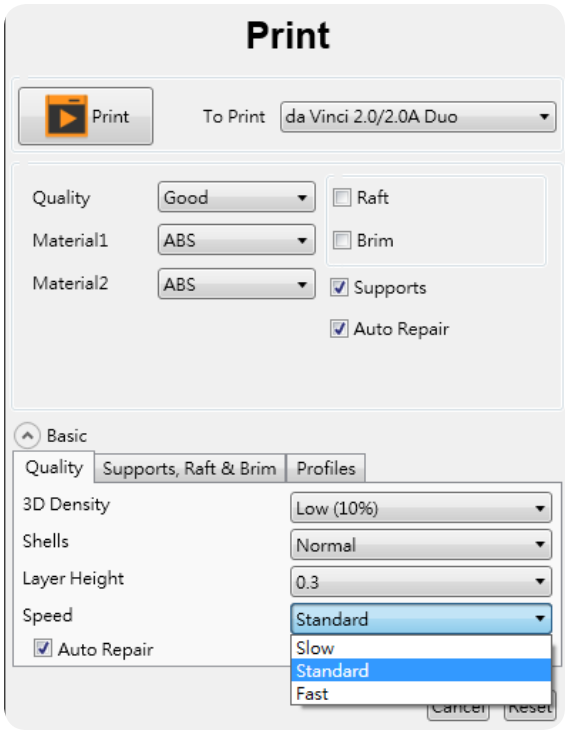


NOTE

The printed layer thickness can be adjusted between 0.1mm – 0.4mm. For best results,we recommend 0.2-0.3mm layer printing.

6.11 Speed

Use the printing speed adjustment to change the settings based on the size and precision of the object. In general a better object quality is accompanied with a lower printing speed.



NOTE

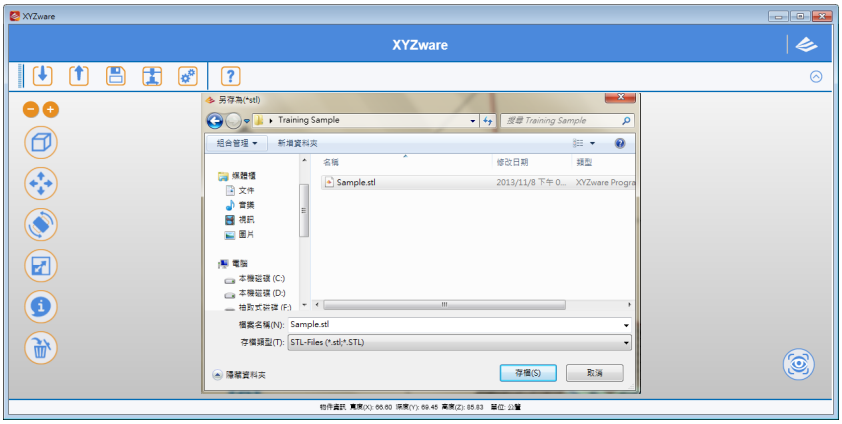
Printing speed settings
Slow, best quality
Standard
Fast

7. Other Functions

Once you have finished customising your object to your preferences, it can be 3D printed or saved for future use.

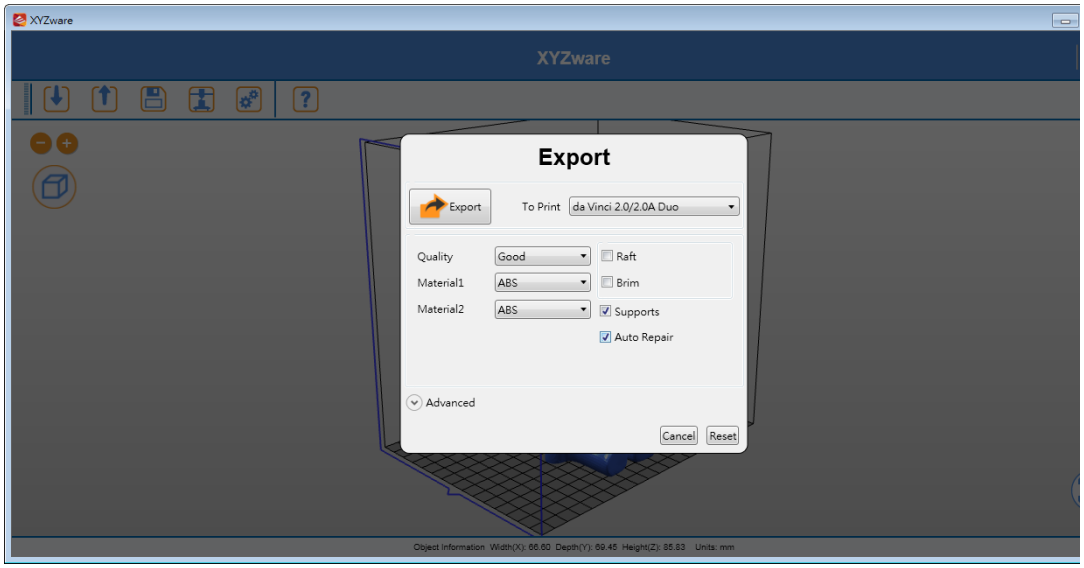
7.1 File Saving

Click on “Save”, the XYZware will save the file as an *.stl format.

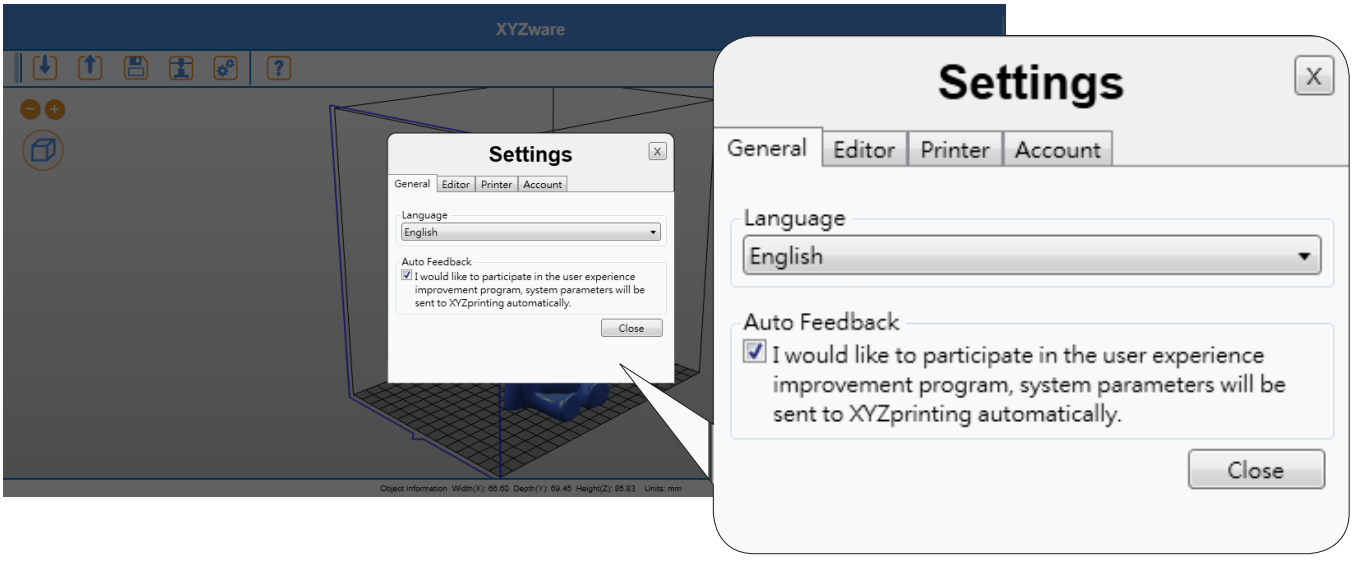


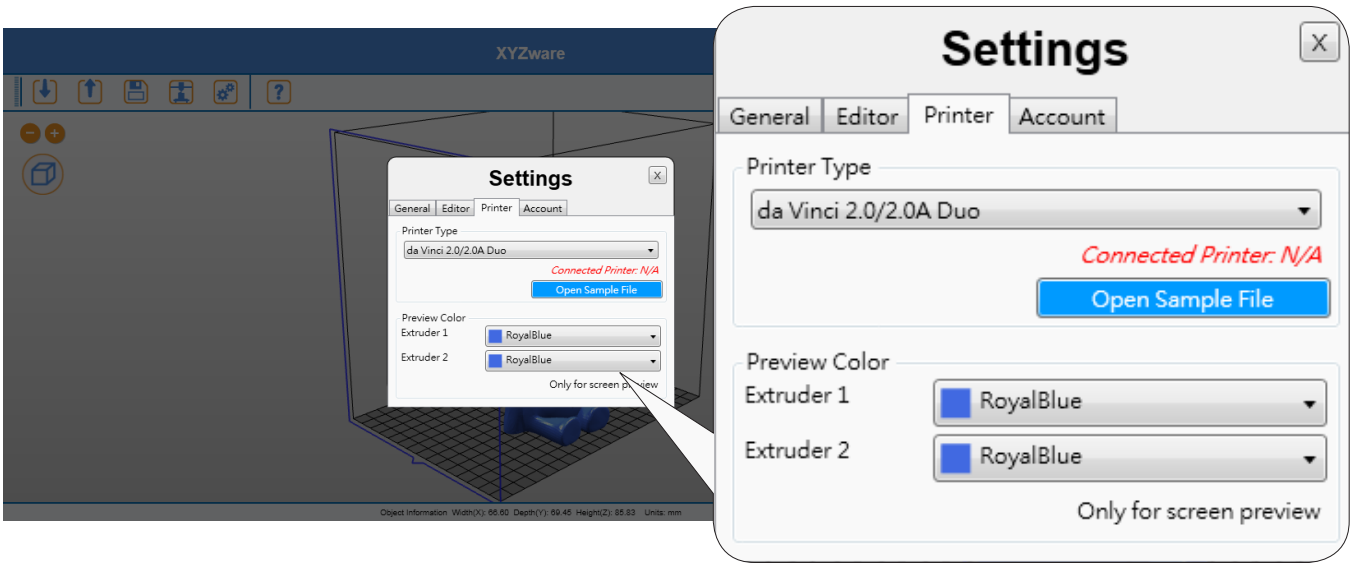
7.2 File Export

Select “Export”, the XYZware will save the file as a *.3w format. .3w is the specific file format that is developed solely for the "da Vinci" series 3D printers. Programs like XYZware will make slicing calculations from STL files and store the printing profile within .3w file, which will speed up your next 3D printing project.



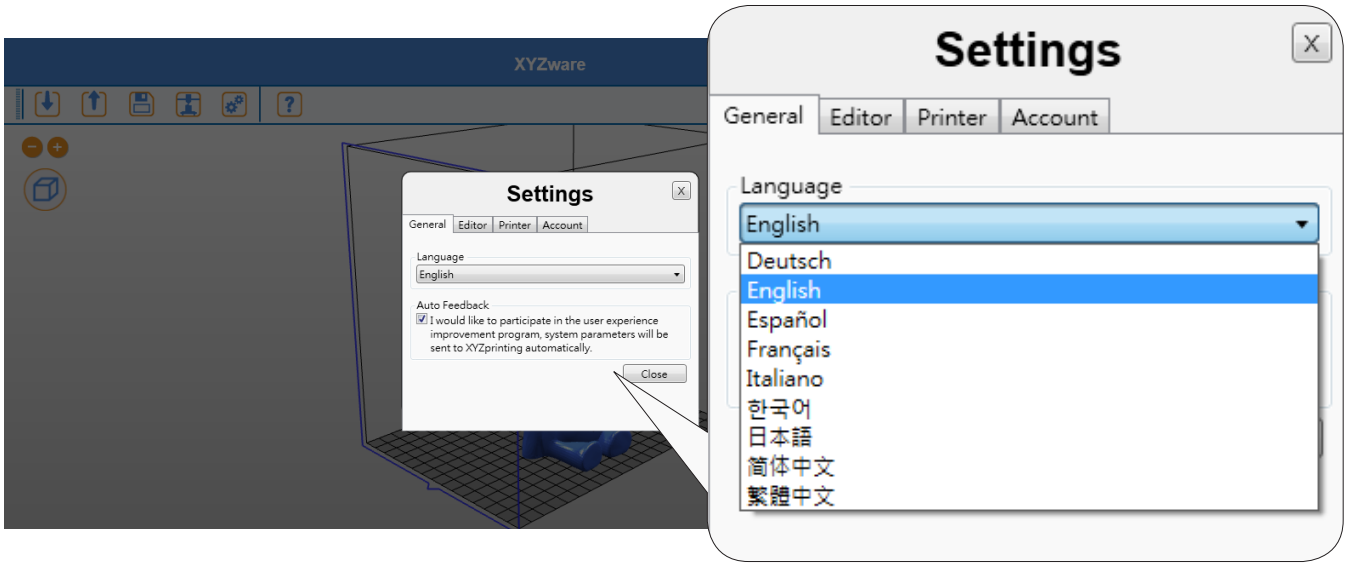
8. Settings and Update





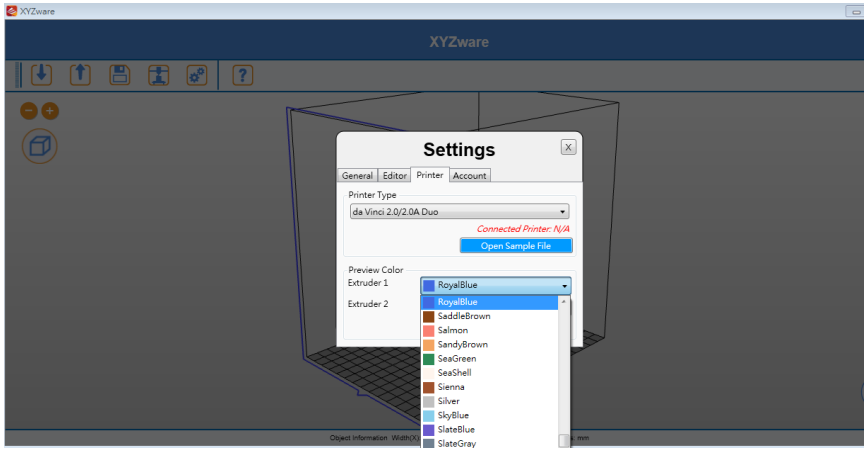
8.1 Switch Language

The XYZware supports multiple languages. You can use the pull-down menu to select a language for your XYZware. After selecting a language preference the change will be instant.



8.2 Preview Printing Color

The settings enable the preview of the filament color from each extruder. Please note that the color is for preview only. It may be different from actual color.

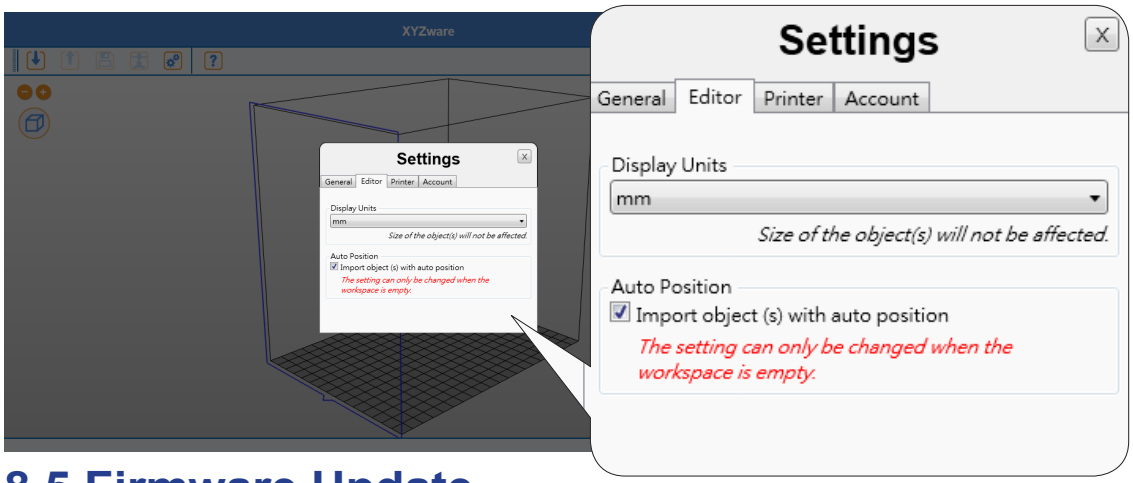


8.3 Printer Type Setup

Please select the printer in use from the drop-down list. The size of print bed will be changed according to the selected printer.

8.4 Auto Position Objects

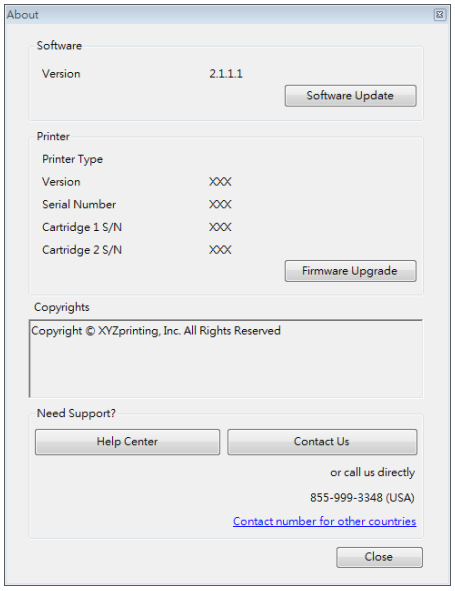
Enabling this function when printing with da Vinci 1.0 series, XYZware will cause the imported objects to shift where they land on the print bed to avoid landing on top of each other. It is recommended to disable this function when using da Vinci 2.0 series 3D printer thus landing both imports at the center of the print bed and combining to become one dual filament object avoiding having to reposition the objects after importing.



8.5 Firmware Update

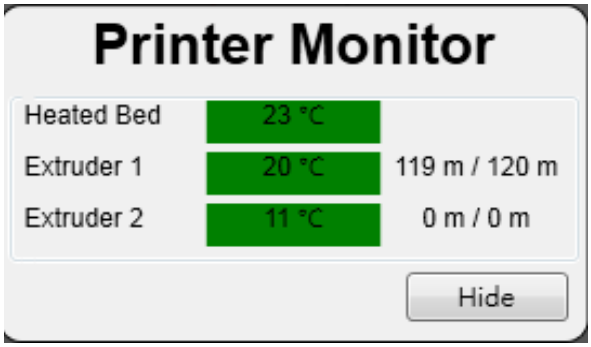
For the best 3D printing experience, please keep the software and/or firmware updated. Updating is simple: click "About" icon and XYZware will check for updates. If the XYZware finds a newer version, click the "Software Update"/"Firmware Upgrade" button for updating.

Note: make sure to confirm Internet access on the PC before using the about and trying to update firmware or updating XYZware software.



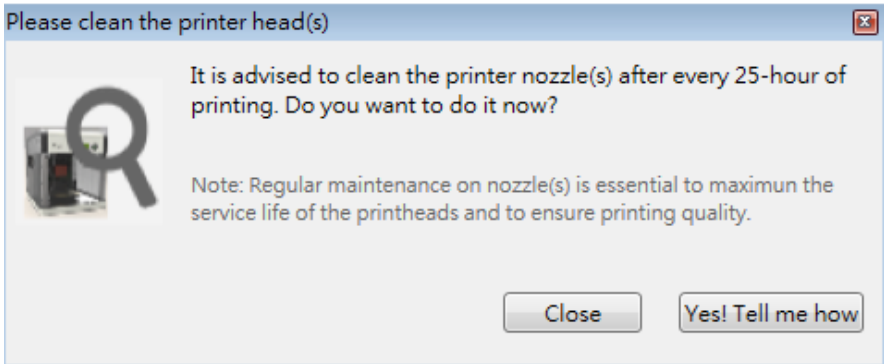
9. Monitor Mode

Temperature of print bed and extruders can be accessed by clicking "Monitor" icon on bottom right side. This function is disabled when the USB cable to printer is removed.



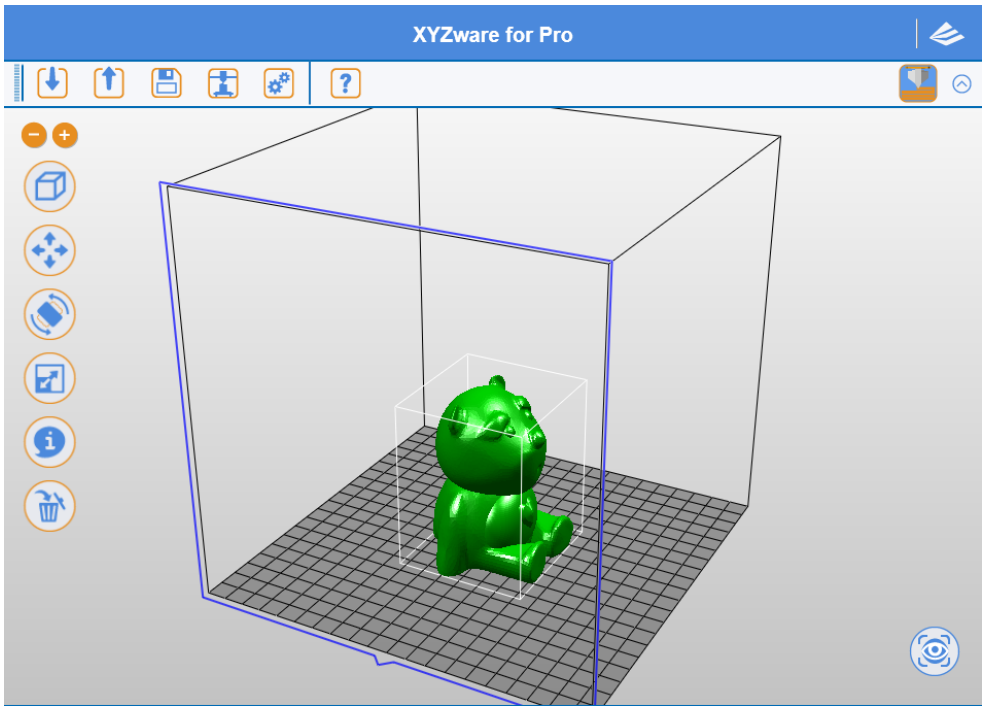
10. Maintenance reminder

Over time, carbon deposits or filament dust buildup on the nozzle may decrease its performance. It is advisable to clean the nozzle after every 25-hour of printing.
After every 25 hours of printing interval, XYZware pops up a reminder as shown below. You may click on “Yes! Tell me how” to watch the tutorial video of nozzle cleaning or refer to the product manual for detailed instructions.



11. XYZware for Pro.

With the promotion of da Vinci 1.0 Professional flagship 3D printer (hereinafter called da Vinci 1.0 Pro), the advanced 3D print software "XYZware for Pro" is also released simultaneously for XYZware. The new version of XYZware for Pro is as user friendly as the previous one. Nevertheless, it includes many professional capabilities in this version. Operations and examples for XYZware for Pro will be introduced in this chapter.



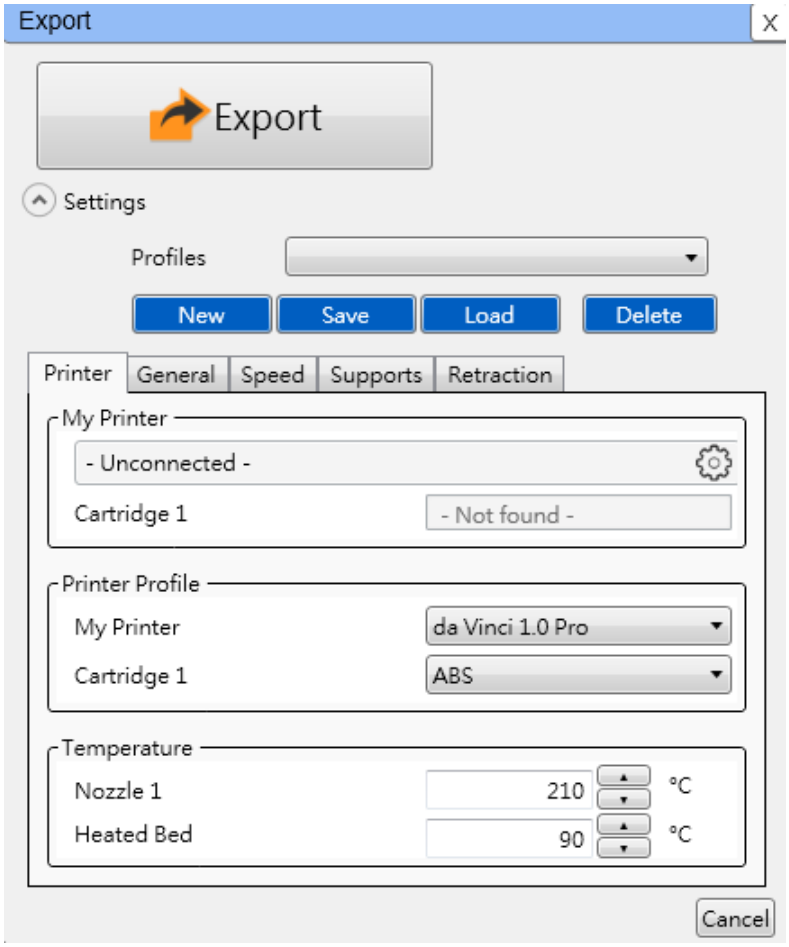
The new version of XYZware for Pro increases print freedom significantly, so that users may control print environment and forming conditions required for 3D objects through adjustment of "Export"/"Print" category function to further refine object forming quality. Simultaneously, 3D printer model and filament type may also be specified, such that the system will configure recommended settings automatically or the settings may be adjusted by users. Finally, “Export ", "Print" function keys are clicked to place slicing information into object for print or for becoming a 3D file.

Hint:

In this chapter, “Export “category function will be used for description of the following functions as an example. Parts of functions can be used only in conjunction with da Vinci 1.0 Pro 3D printer. Therefore, we recommend that you purchase and connect da Vinci 1.0 Pro 3D printer for the optimal experience when using this software.

	Function Category	Category Description
11.1	Printer	Print temperature / print material selection
11.2	General	Object structure and fineness parameter setup
11.3	Speed	Extruder moving speed adjustment
11.4	Supports	Selection of support structure supplementary to print object
11.5	Retraction	Adjustment of print material squeeze style

11.1 Printer



11.1.1 My Printer

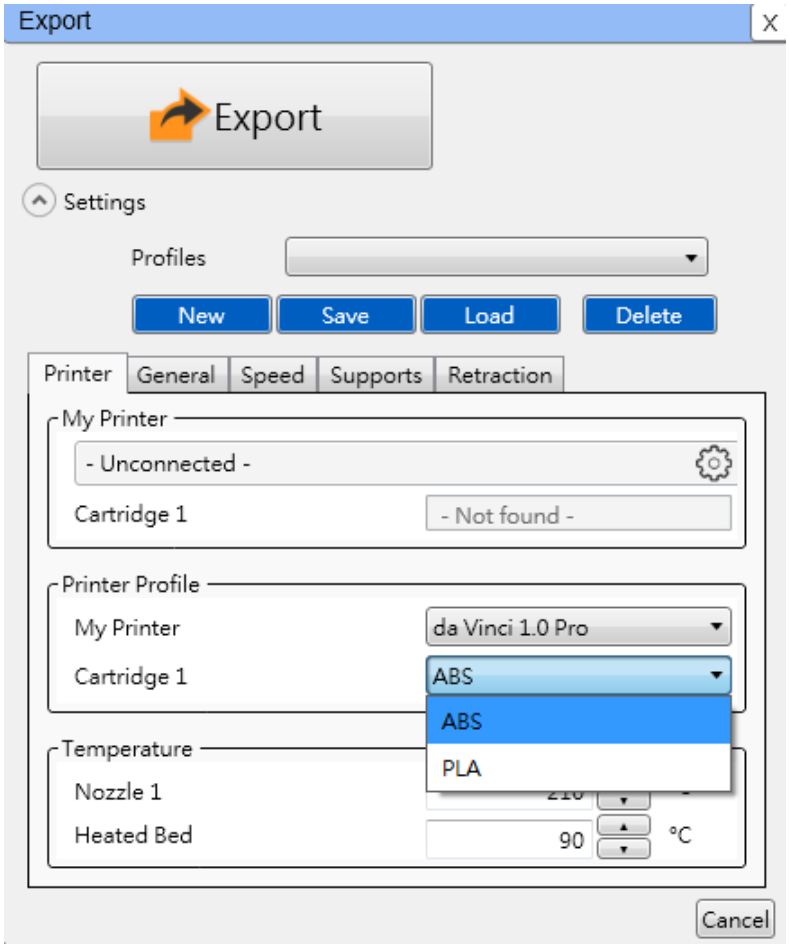
As XYZware for Pro is not in connection with a 3D printer, no information will be displayed in this field. Users have to specify product model and print material through "Printer Profile" function. After connection with the 3D printer, the system will read machine information and display default parameters of this printer.

11.1.2 Printer Profile

Users may specify 3D printer model and loading filament type, XYZware for Pro will configure print recommended settings. Also, parameters may be adjusted by users and "File Conversion", "Print" functions are placed into object slicing information.

Hint:

da Vinci 1.0 Pro supports ABS/PLA filament print. Users may switch print loaded print temperature through ABS/PLA.



11.1.3 Temperature

Operating temperature of print bed and print module is adjusted. The temperature information is saved in object slicing information.

Heating Components	Temperature Range
Print Module	170°C ~ 240°C
Print Bed	41°C ~ 100°C

Hint:

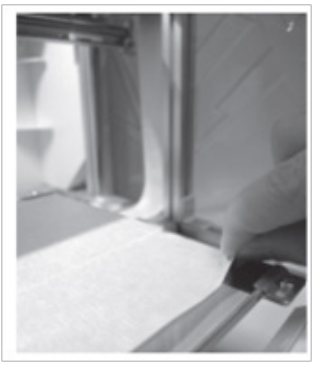
● If users specify print temperature in da Vinci 1.0 Pro, XYZware for Pro will give priority to print according to the print temperature information in the file.

● If the temperature for print bed is specified as 40°C, room temperature printing will be enabled and the print bed will not be heated.

● Excessively low extruder temperature may result in poor filament feeding, such that the print module cannot discharge. Therefore, please adjust the operating temperature of the extruder first.

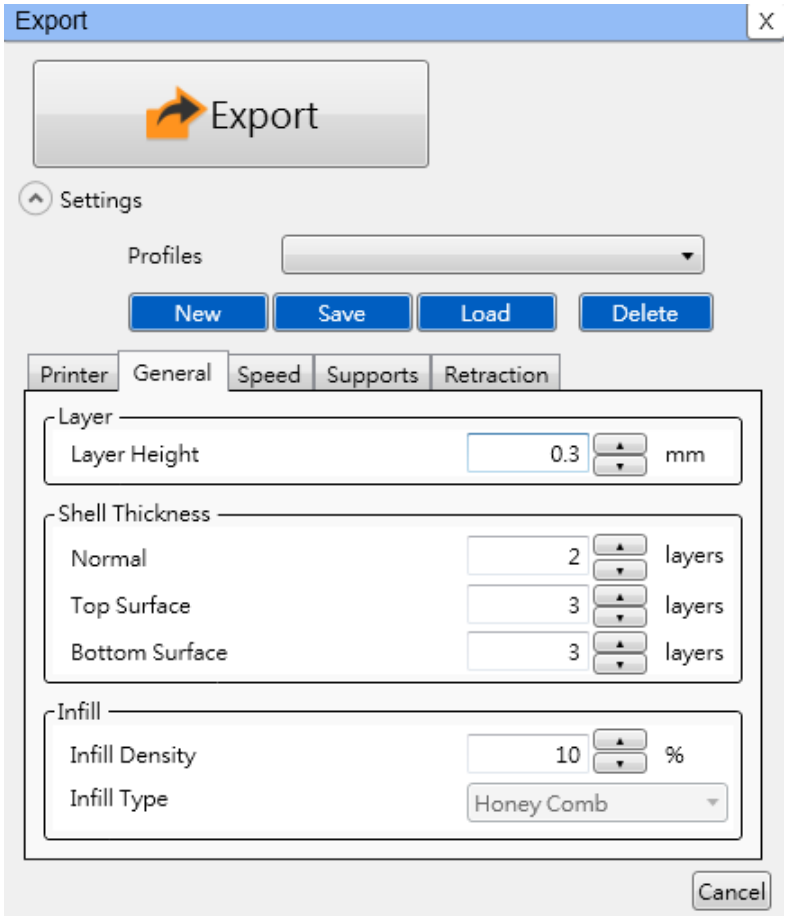
● Excessively low print bed temperature may result in unstable placement of object in printing, resulting in failed printing. Please attach a bed patch before printing. If there is no improvement, please raise the operating temperature of the print bed.

● For a print object with a special structure, glue stick may be applied onto the bed patch to increase adhesion. However, the object may be relatively difficult to remove.



11.2 General

This function supports adjustment for print structure of object, and the use of setting options of structure density and shell print in conjunction to result in different effects.



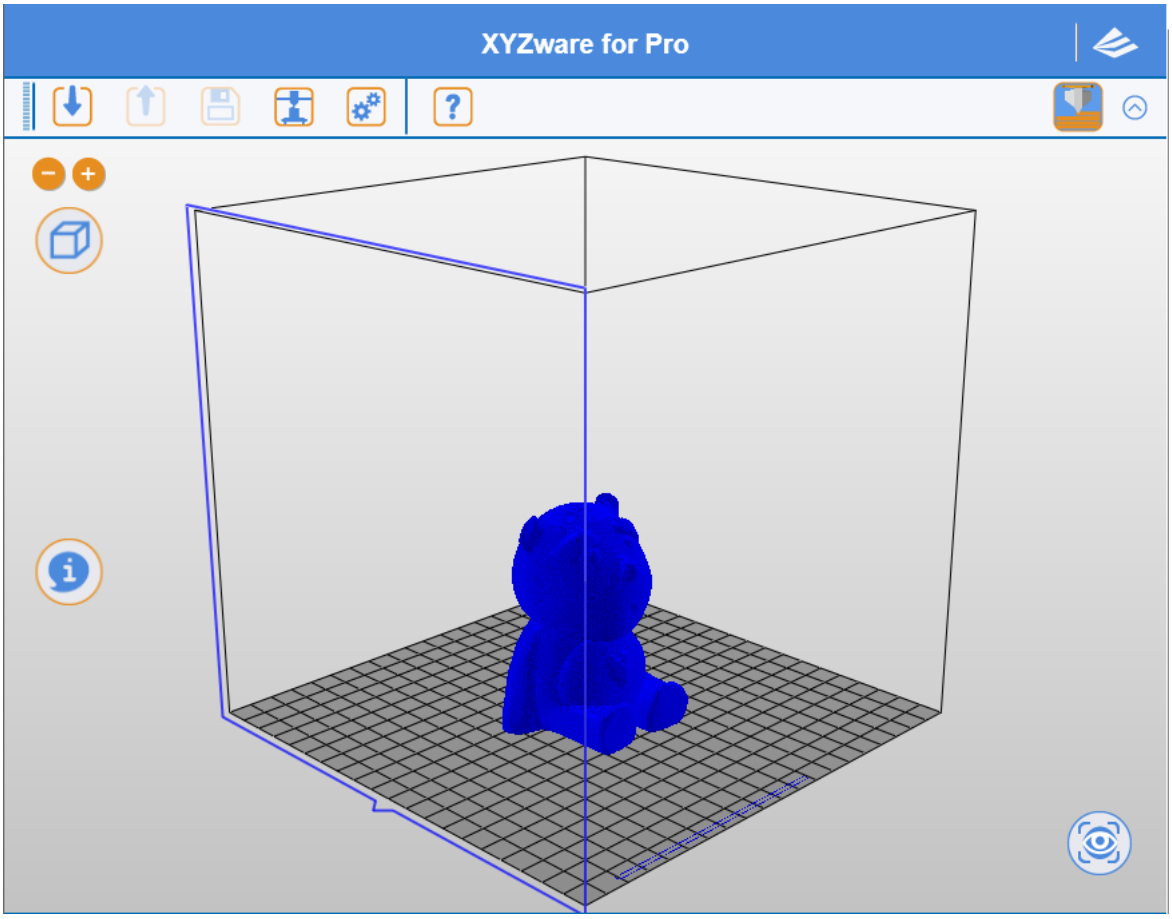
11.2.1 Layer Height

Users may select smaller layer height to obtain finer print effect, or may select larger layer height to print the object quickly. Fine print effect takes longer.

Function Options	Setting Values
Layer Height	0.05mm–0.4mm (50 microns - 400 microns)

Hint:

● Portions of objects with simple structure may achieve high precision print of 0.05 mm (50 microns).



Material	ABS
Printer Type	FXXPRO
Estimated Time	10h : 42m : 03s
Estimated UsageCartridge 1	32.974m
Infill Density	Low (10%)
Layer Height	0.10
Shells	Normal
Speed	15
Raft	No
Brim	No
Supports	No

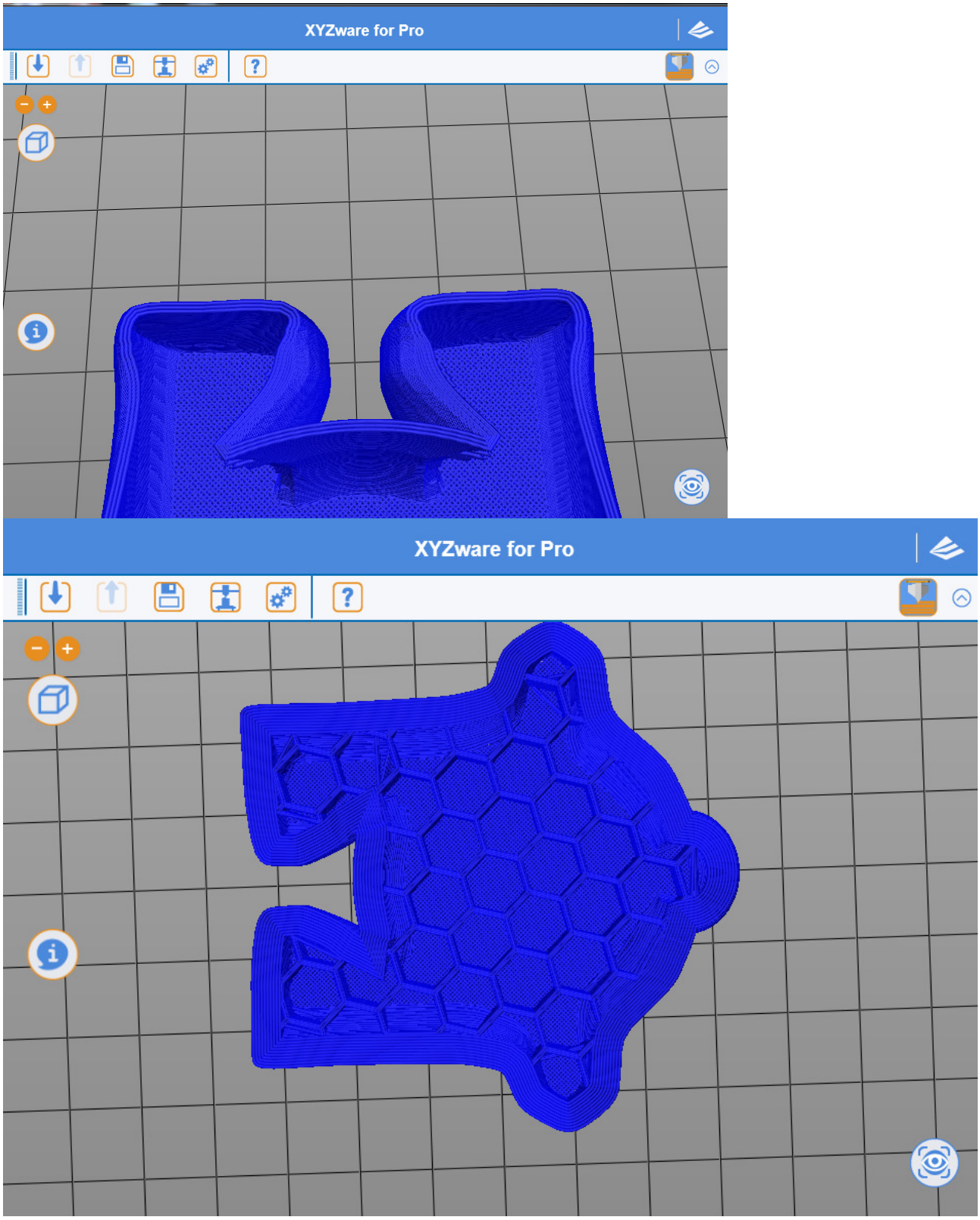
Material	ABS
Printer Type	FXXPRO
Estimated Time	21h : 13m : 01s
Estimated UsageCartridge 1	42.541m
Infill Density	Low (10%)
Layer Height	0.10
Shells	Normal
Speed	15
Raft	No
Brim	No
Supports	No

11.2.2 Shell Thickness

Shell is the surface structure of an object. A thick shell may result in better quality while taking longer to print. Selection of thin shell print also enables quick print, but it should be noted that specific portion of the object should satisfy requirement of surface strength.

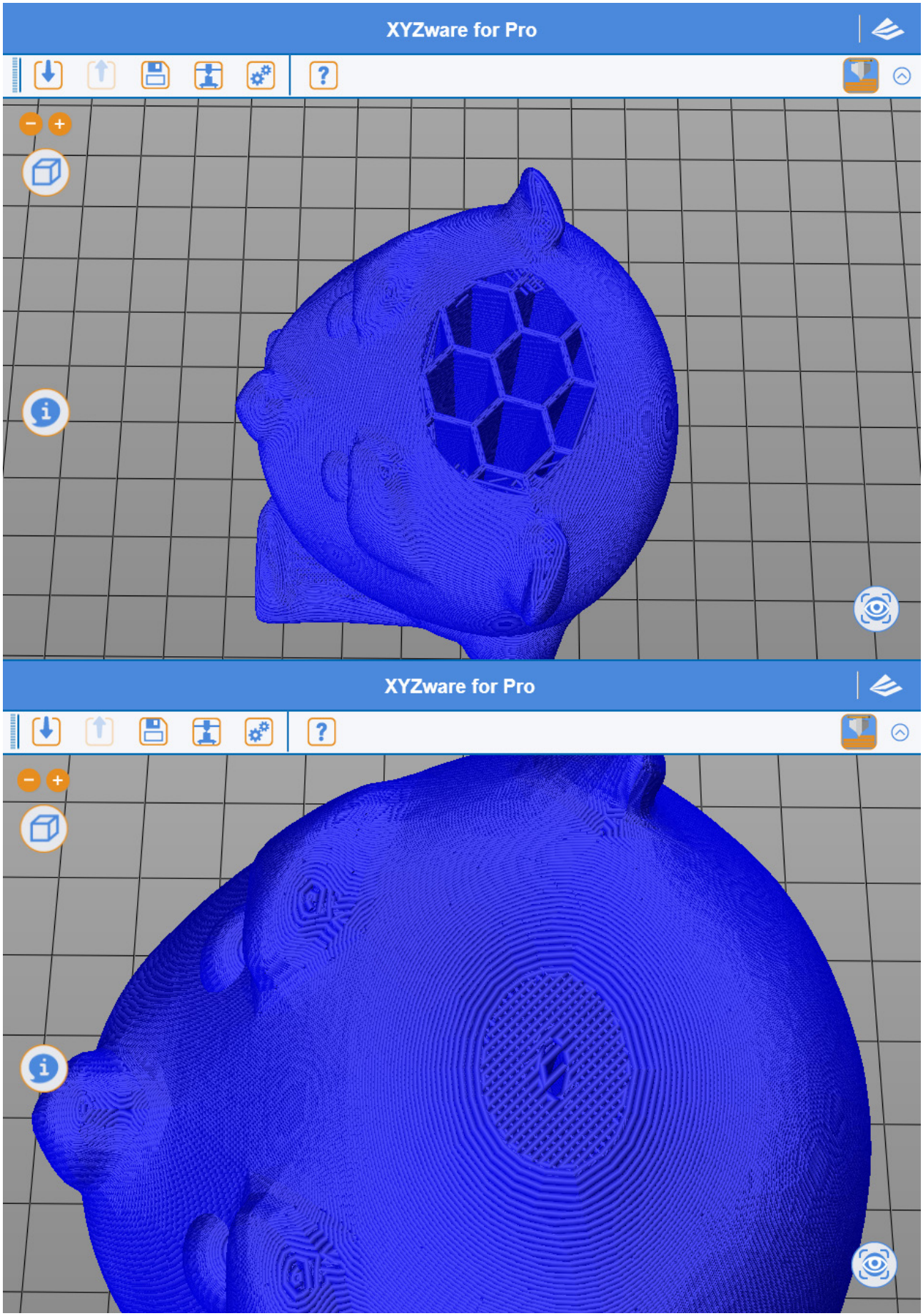
Normal

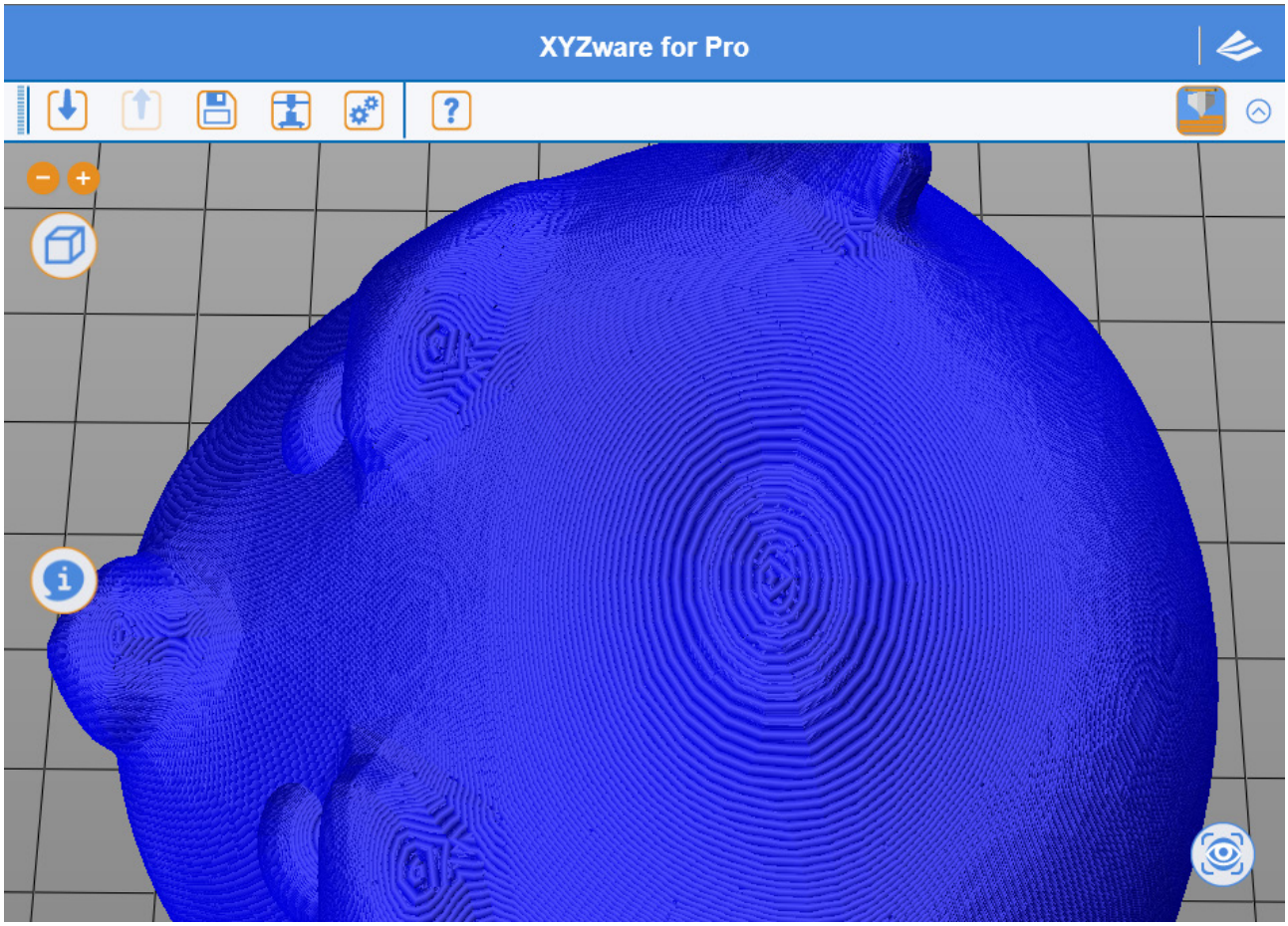
For the number of print layers of the shell for the body of the object, two layers (layer = 3) are printed from outside to inside to obtain robust shell layer and repair defects due to print of the first layer, such that neither void nor hole is resulted on surface.



Top Part

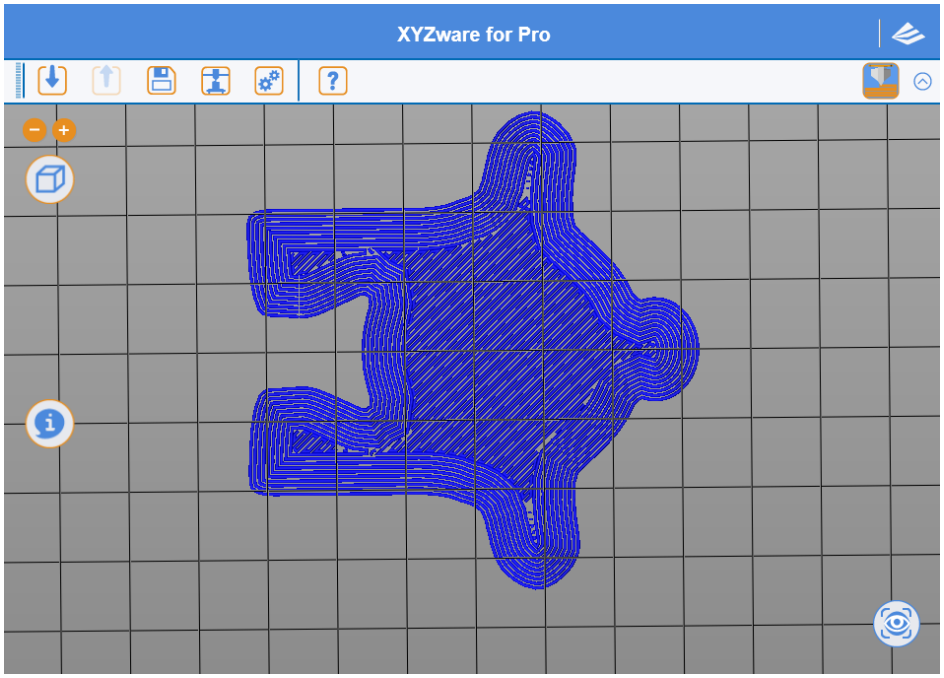
After XYZware for Pro finishes the infill structure on the top of the print object, please perform the last print coating on the top. The top is usually the last part of object in print process. Users may adjust the number of layers to be printed on the top. Larger number of print layers, if used, will result in denser and more solid sealing structure on the top.

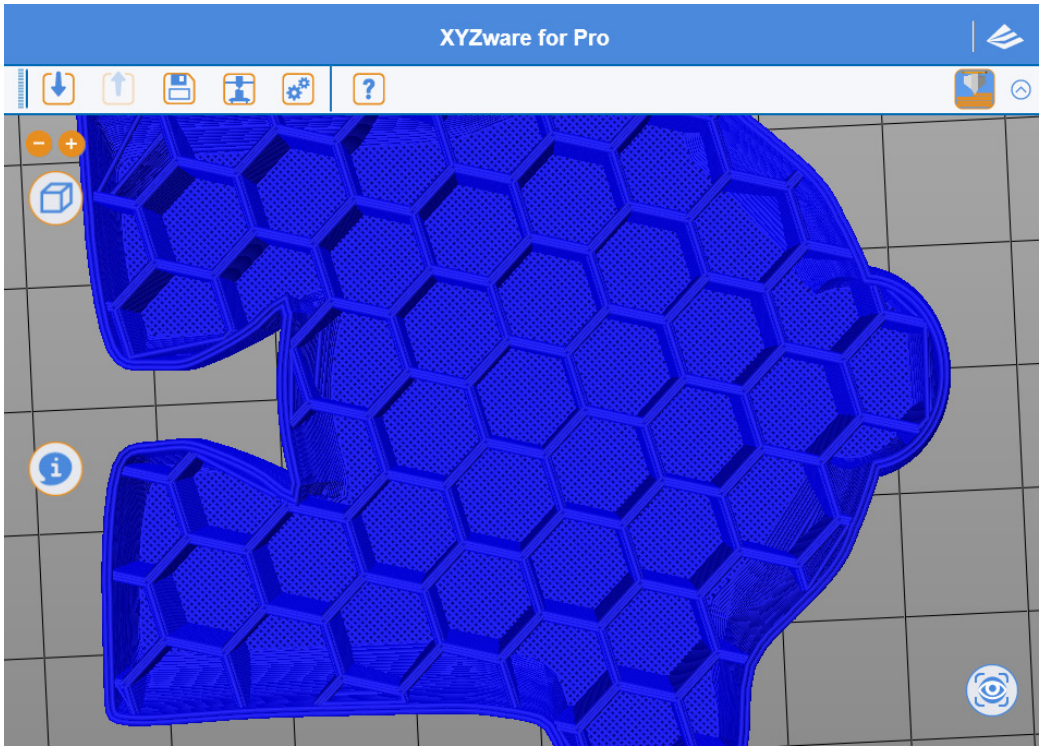

XYZware for Pro
XYZware for Pro



Bottom Part

Before XYZware for Pro prints the infill structure of the bottom part of the print object, a complete and solid bottom surface of object is printed. A perfect void free bottom surface is usually resulted through three-layer print (layer = 3). In addition to bottoming effect, better object stability is provided in printing.





Function Options	Setting Values
Shell Thickness	Selection range: 1 (thin shell) - 10 (thick shell), unit: layer

Hint:

If you are accustomed to the original XYZware style of selection for shell thickness, please refer to the following information setup

Thin: 1 layer
Normal: 2 layers
Thick: 3 layers

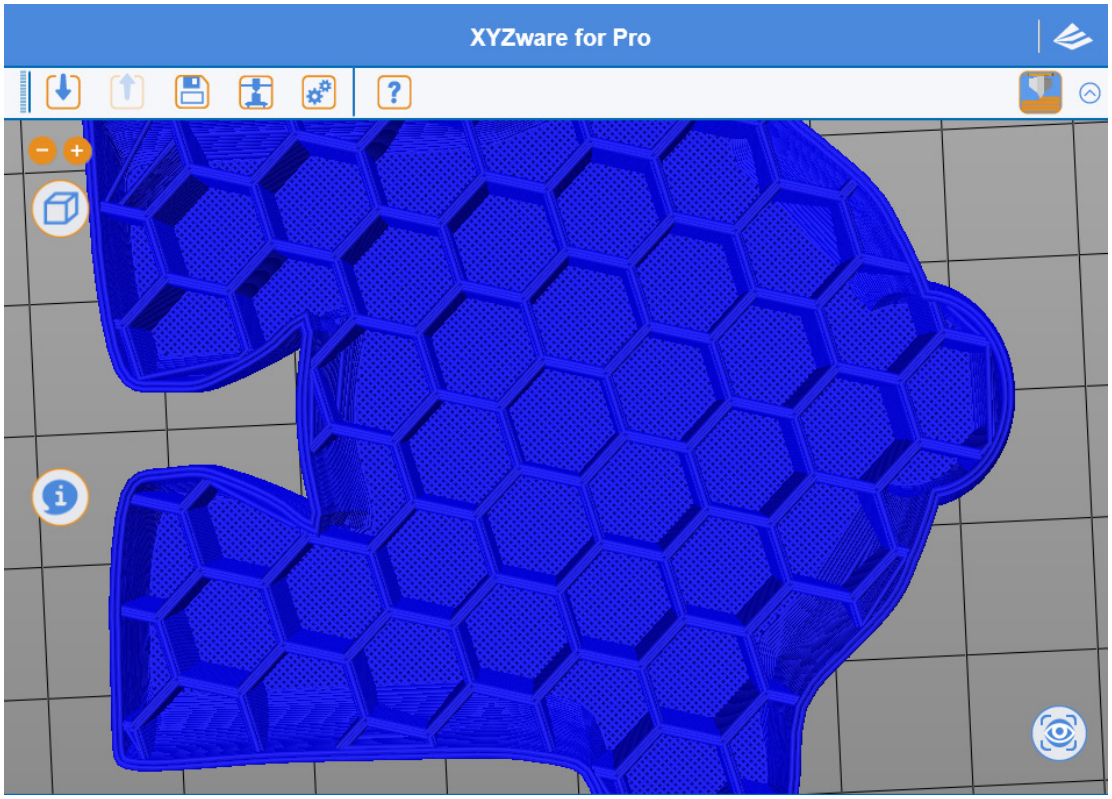
Hint:

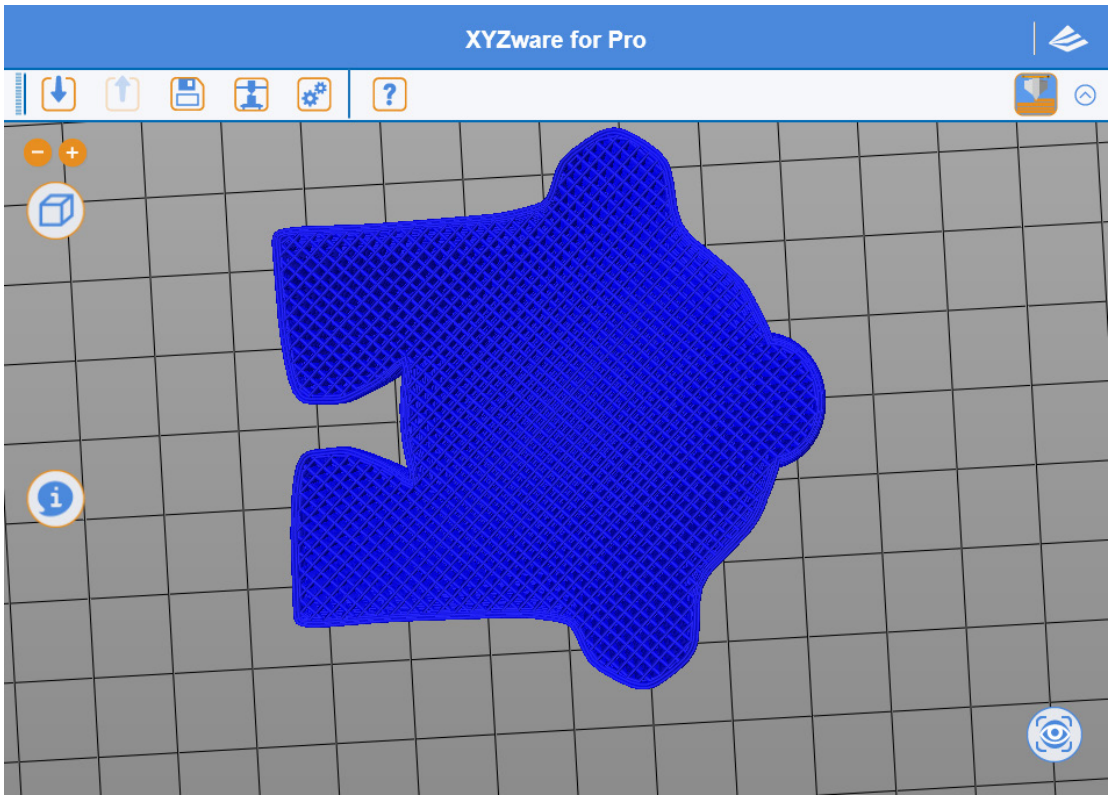
If the top part and solid layer (infill) are set to 0, a hollow object will be resulted

11.2.3 Infill

3D Density

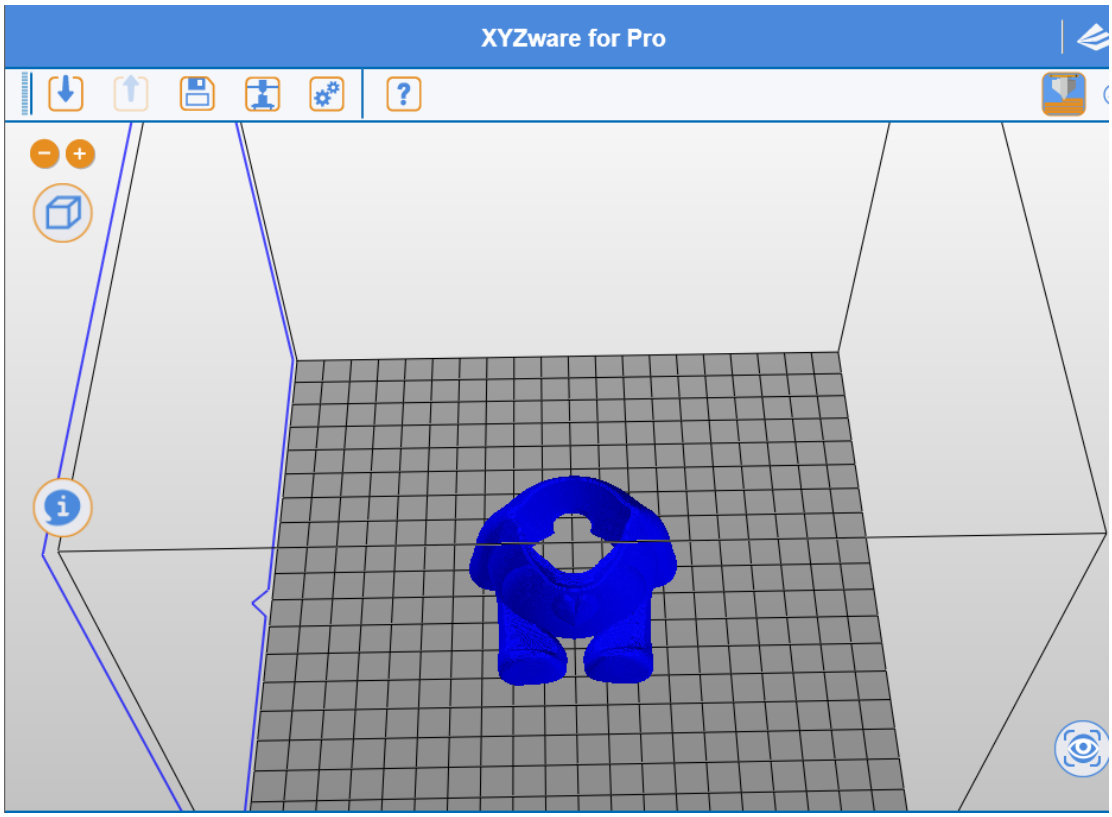
Users may adjust print density of the object, and may generate different effects with denseness of internal structure. The strength of object is susceptible to its 3D density setting.





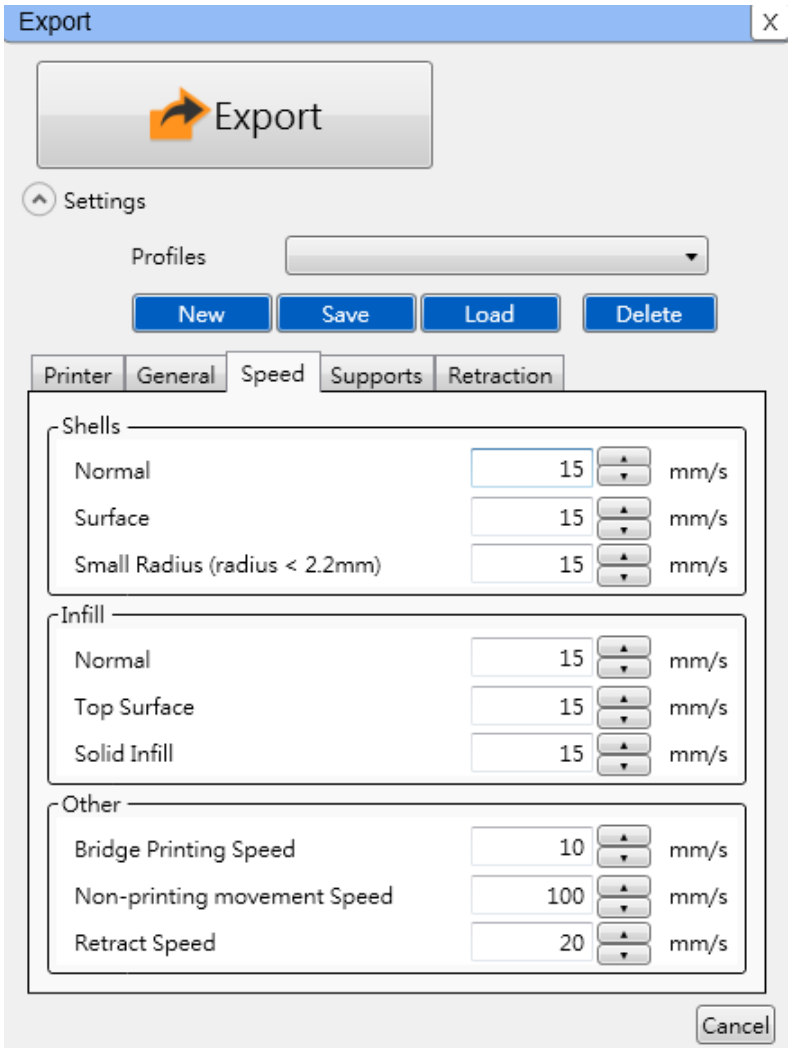
Hint:

If 3D Density is set to 0, no infill structure will be printed



11.3 Speed

Adjustment of print speed allows users to perform setup according to object size and precision level. Fine object quality is usually accomplished with low speed print.



11.3.1 Shells

Normal

Print speed of object body is the key for time and quality of finished product printing. Extremely good effect is available for most print objects with adjustment with lower print speed and appropriate layer height

Outer Radius

For print speed of object surface, adjustment of print speed for the outermost portion may change print quality of the surface directly and may differ from print speed of internal infill structure, improving print quality of the object and optimizing the entire print time

Small Radius

If the object has an arc structure with a radius roughly below 2.2 mm, print speed may be adjusted through such setup. For small radius print, adjustment of speed may result in more stable heap of print materials

Hint:

● Excessively fast print speed might result in unstable squeeze of materials. A print speed between 15 mm/s – 60 mm/s is relatively appropriate. Filament type will affect print quality
● If a minimal speed of 5 mm/s is used for printing, the object will take a very long time to print
● When increasing print speed, please pay attention to the need for operating temperature increase for the extruder to prevent extruder discharge failure due to insufficient material supply

11.3.2 Infill

XYZware for Pro may adjust print style of infill structure for different parts of an object

Normal

Most infill structures of an object

Top Part

For the structure of the object before starting to print coating of top part, the last three structure layers will be selected by the system to perform top part printing

Bottom Part

For first three structure layers of bottom part of object printed primarily, the system will apply this setup to perform adjustment of print speed

Hint:

Quicker speed is recommended for print of infill structure. A print speed between 30 mm/s and 60 mm/s is appropriate. A print speed below 30 mm/s has limited benefit to object forming quality

11.3.3 Others

Bridges Speed

As an object is printed in a pattern similar to a "∏" shape, shorter distance between two endpoints will not result in print support structure to start print, which is referred to as Print Bridges. Quicker print bridges speed may prevent object from sag.

Extruder Moving Speed

The movement speed at which the print module does not discharge in the area not for printing

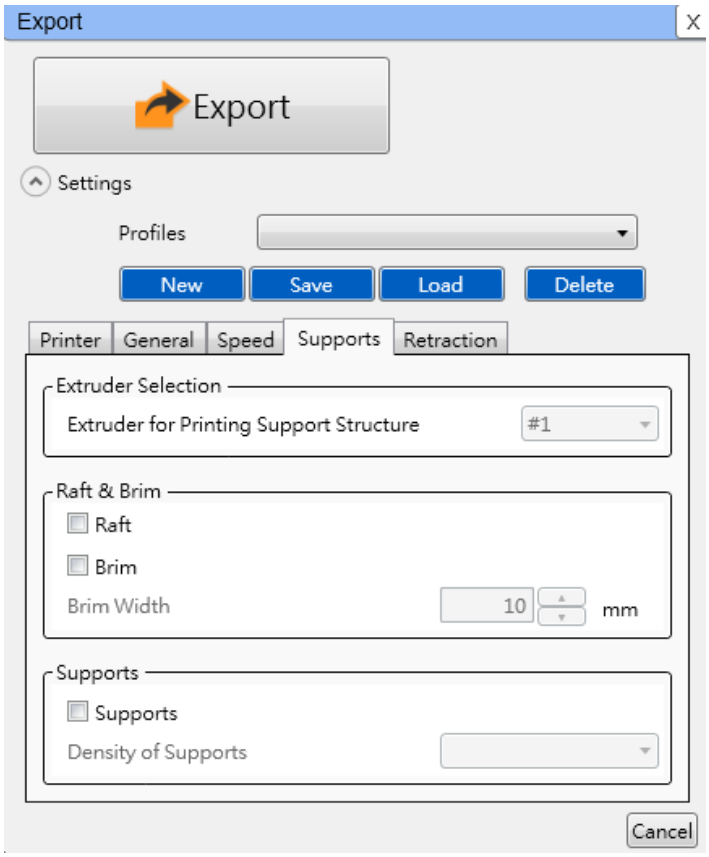
Retract Speed

The speed for pulling filament backwards. Refer to the function introduction in the next chapter for more about retraction

Hint:

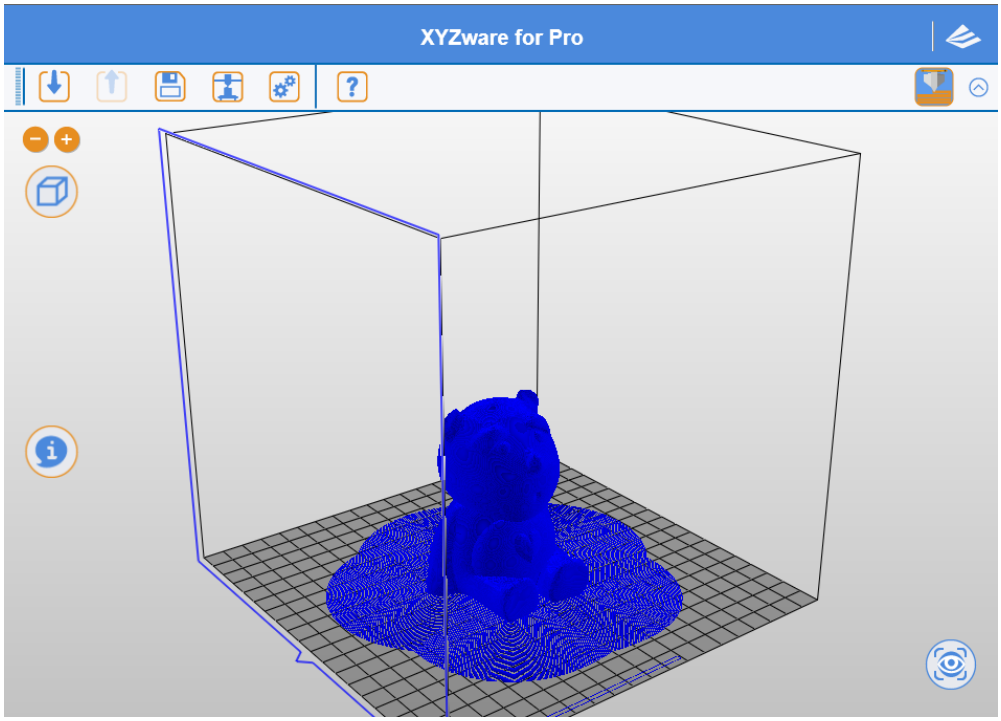
Cooperation of retraction speed and other print speeds will affect feeding stability directly in printing. A print speed slightly faster than the retraction speed would prevent material squeeze from interrupt

11.4 Supports



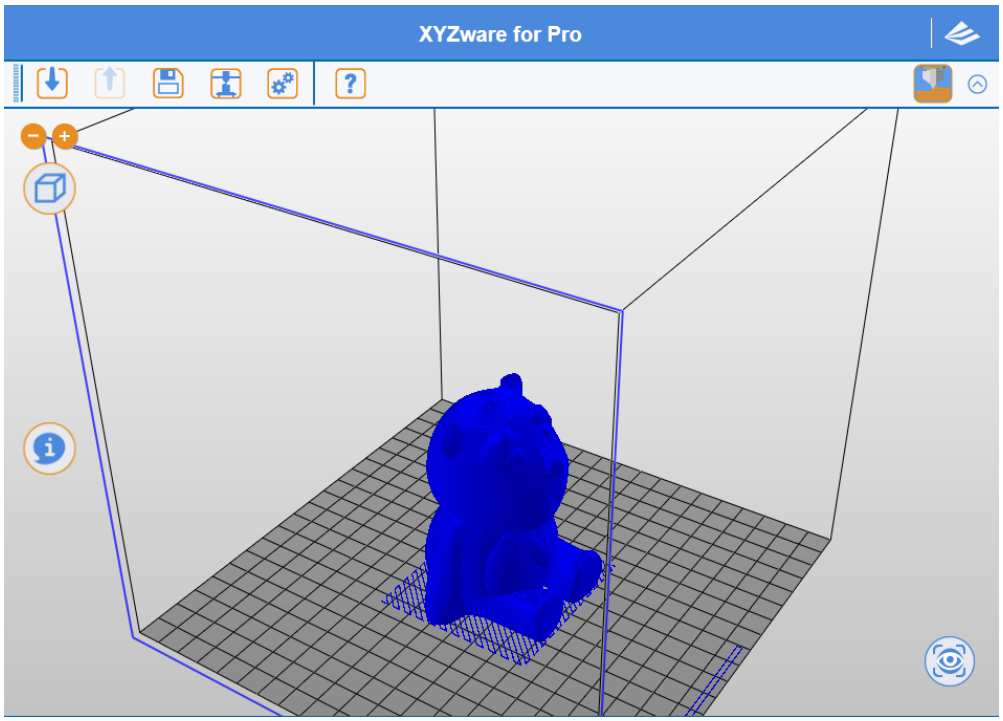
11.4.1 Raft & Brim

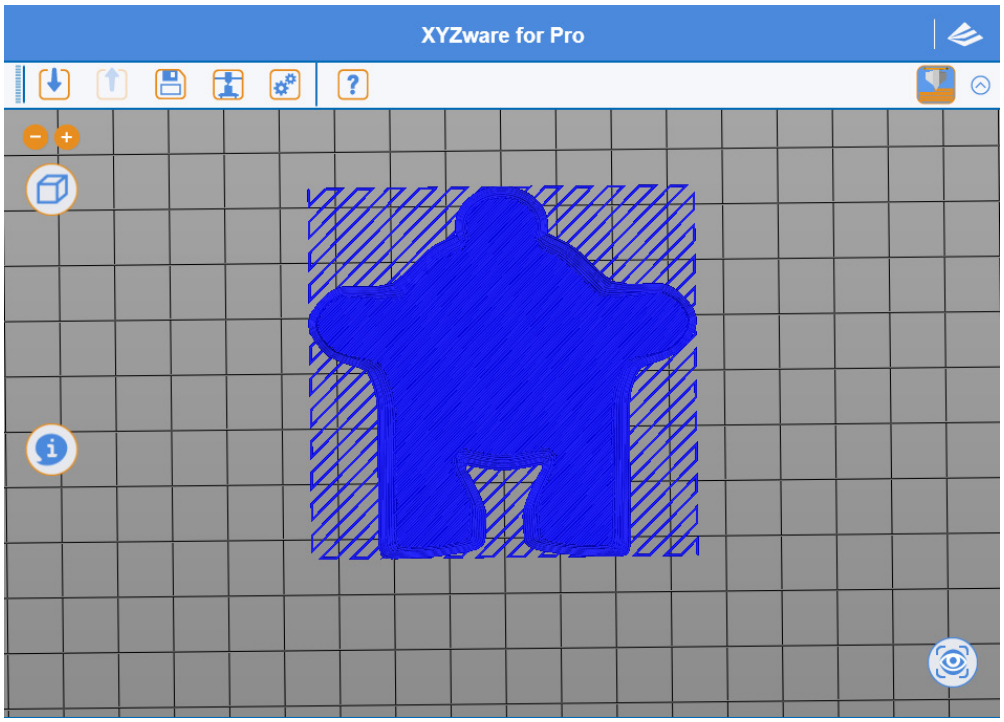
Brim function allows users to enlarge the range of contact with bottom area of print bed in printing relatively elongated object to prevent swing due to print from influencing print quality



Raft

This function allows users to increase strip type raft on bottom of object for large object to be less susceptible to levelness of the print bed and print warpage during long print jobs





11.4.2 Supports

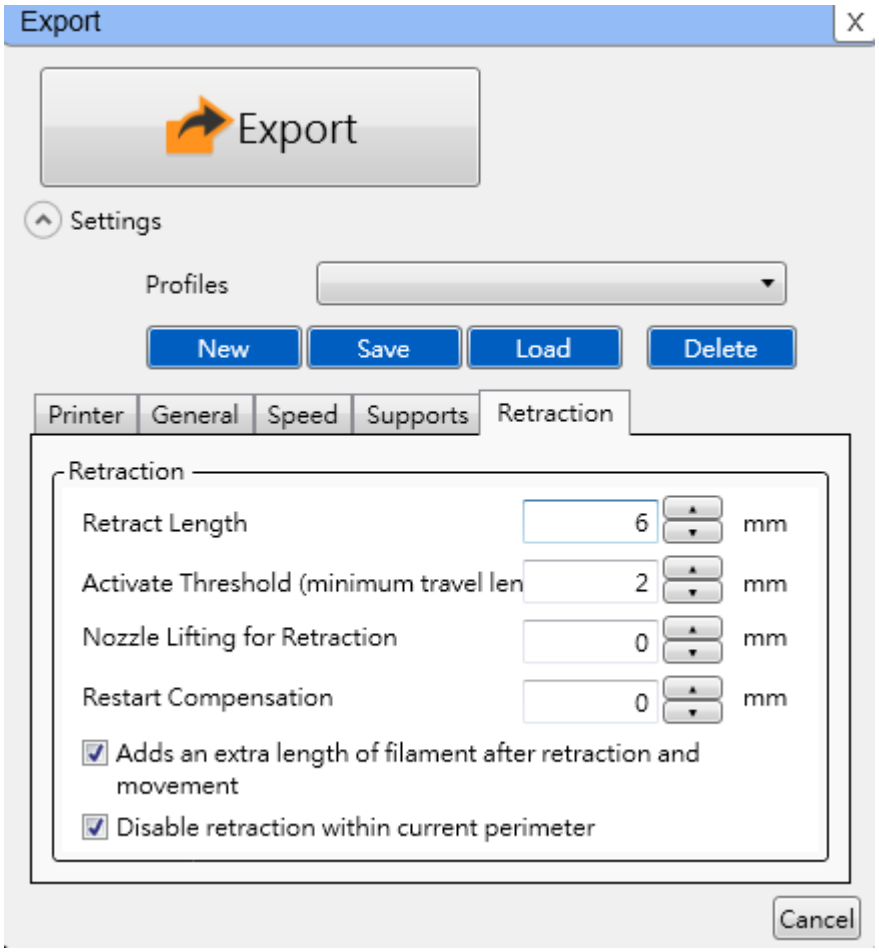
The support pillar structure printed in response to object characteristics is usually used to support suspended object and object without force bearing area on bottom, and may be removed after print

Hint:

There are three modes for users to use
Low supports
Standard
High

Low supports is applicable to most print objects, and is an appropriate print solution due to easy peeling characteristic

11.5 Retraction



11.5.1 Retract Length

In printing object, before large movement of print module, print filament will be drawn back, such that slight negative pressure occurs in print nozzle, preventing material from adhering to the object while moving, improving surface quality of print object

11.5.2 Retract Threshold

Such setting will allow users to set up retraction mechanism activation style. For setup mode, users usually specify the minimal print module movement distance for retraction mechanism activation

11.5.3 Z-Axis Movement

After retraction, the print module will be elevated slightly with such setup value. Such action prevents material from adhering to the object, and
Makes a more orderly final print stop point. However, it should be noted that excessively large elevation will extend print preparation time for the next print layer, and portions of angles may results cooling and difficult to bond conditions between layers