PolyDryer™ FAQ

1. Q: Can drying settings other than the recommended power level and drying time be used?

A: Yes. The recommended power levels on the Dry Dock sticker and manual are provided as the safest power levels, based on Polymaker analysis on the softening temperature of different materials on the market. In other word, there is no risk of filament deformation with the recommended power levels. Different power levels are directly related to the temperature at the Dry Dock air outlet. With power level 1, the temperature at the Dry Dock air outlet is ~50℃. With power level 2, it is ~60℃. With power level 3, it is ~70℃. During drying, materials directly facing the air outlet are generally heated to 2-3℃ lower than the air outlet temperature. To avoid material softening and deformation during drying, the softening temperature of the filament needs to be at least 5℃ higher than the temperature at the Dry Dock air outlet. Therefore, for power level 1, the softening temperature of the filament needs to be ≥55℃; for power level 2, it needs to be ≥65℃, and for power level 3, it needs to be ≥75℃. The recommended drying times provided on the Dry Dock sticker and manual are based on materials (already dried), first placed in an environment of 25℃ and 70% RH for 5 days, then dried using the recommended power levels in that environment until suitable for printing. When factors, such as initial moisture content of the materials, environmental temperature, and humidity, are different, drying times can be adjusted accordingly.

In general, using higher power level and longer drying time can achieve better drying result. In the table below, we list the suitable power levels of all Polymaker materials, making it convenient for users to choose higher power levels. If using materials from other brands, please check the softening temperature of the filament first before using a higher power level.

Material	Product Name	Power Level 1	Power Level 2	Power Level 3
PLA	PolySonic™ PLA	√	×	×
	PolySonic™ PLA Pro	√	×	×
	PolyTerra™ PLA (1.75mm)	√	√	√
	PolyTerra™ PLA (2.85mm)	√	×	×
	PolyTerra™ PLA+ (1.75mm)	√	√	√
	PolyTerra™ PLA+ (2.85mm)	√	×	×
	PolyTerra™ PLA Edition R (1.75mm)	√	√	√
	PolyTerra™ PLA Edition R (2.85mm)	√	×	×
	PolyLite™ PLA (1.75mm, Except for Silk Color)	√	√	√
	PolyLite™ PLA (1.75mm, Silk Color)	√	×	×
	PolyLite™ PLA (2.85mm)	√	×	×
	PolyLite™ PLA Pro (1.75mm)	√	√	√
	PolyLite™ PLA Pro (2.85mm)	√	×	×
	PolyLite™ LW-PLA (1.75mm)	√	√	√
	PolyLite™ LW-PLA (2.85mm)	√	×	×
	PolyLite™ CosPLA (1.75mm)	√	√	√
	PolyLite™ CosPLA (2.85mm)	√	×	×
	PolyMax™ PLA (1.75mm)	√	√	√
	PolyMax™ PLA (2.85mm)	√	×	×
	PolyWood™ (1.75mm)	√	√	√
	PolyWood™ (2.85mm)	√	×	×
	Polymaker Draft PLA (1.75mm)	√	√	√
	Polymaker Draft PLA (2.85mm)	√	×	×
PETG	PolyLite™ PETG	△	√	√
	PolyMax™ PETG	△	√	√
	PolyMax™ PETG-ESD	△	√	√
ABS	PolyLite™ ABS	△	√	√
ASA	PolyLite™ ASA	△	√	√
PC	PolyLite™ PC	△	△	√
	PolyMax™ PC	△	△	√
	PolyMax™ PC-FR	△	△	√
	Polymaker PC-ABS	△	△	√
	Polymaker PC-PBT	△	△	√
PA (Nylon)	PolyMide™ CoPA	△	△	√
	PolyMide™ PA612-CF	△	△	√
	PolyMide™ PA6-CF	△	△	√
	PolyMide™ PA6-GF	△	△	√
	PolyMide™ PA12-CF	△	△	√
TPU	PolyFlex™ TPU90	△	√	√
	PolyFlex™ TPU95	△	√	√
	PolyFlex™ TPU95-HF	△	√	√
PVB	PolySmooth™	√	√	×
	PolyCast™	√	√	×
PVA	PolyDissolve™ S1	△	△	√
Blend	PolySupport™ (1.75mm)	√	√	√
	PolySupport™ (2.85mm)	√	×	×
	PolySupport™ for PA12	△	△	√
Note				
√ means the Power Level is recommended to use				
△means the Power Level isn't recommended to use. If used, it will result in bad drying result, but material deformation.				
× means the Power Level is prohibit. If used, it will cause the filament to soften and deform.				

2. Q: Why does the PolyDryer™ only display power level, but drying temperature directly?

A: Directly displaying a temperature might mislead users. During drying, there is a relatively complex temperature distribution inside the PolyDryer™ Box, and a single temperature can't represent the true situation. Moreover, the temperature distribution is related to factors such as environmental temperature, the initial moisture content of the materials (heat is carried away when moisture is removed from the material), spool size, material weight, etc.

Different power levels mainly indicate different drying capabilities (better overall drying capability with higher power level). Regarding drying temperature, different power levels are directly related to the temperature at the Dry Dock air outlet. With power level 1, the temperature at the Dry Dock air outlet is ~50℃. With power level 2, it is ~60℃. With power level 3, it is ~70℃.

3. Q: How should the power level and drying time be adjusted when the environmental humidity is high?

A: As the environmental humidity increases, it becomes more challenging to dry the air with the heater in Dry Dock. When the environmental humidity is higher than 70% RH, it is recommended to select the highest power level suitable for the material and extend the drying time appropriately. If using Polymaker materials, The table in Q&A 1 can be used as the reference to determine the highest power level. If using materials from other

brands, please check the softening temperature of the filament first before using a higher power level.

4. Q: How should the power level and drying time be adjusted when the environmental temperature is low?

A: During the drying, the PolyDryer™ Box continually releases heat to the environment, because of the temperature gradient between the inside and outside of PolyDryer™ Box. As the environmental temperature decreases, the average temperature inside the PolyDryer™ Box decreases accordingly, and the temperature difference increases. When the environmental temperature is below 15℃, it is recommended to select the highest power level suitable for the material and extend the drying time appropriately. If using Polymaker materials, The table in Q&A 1 can be used as the reference to determine the highest power level. If using materials from other brands, please check the softening temperature of the filament first before using a higher power level.

5. Q: How should the power level and drying time be adjusted when the materials have been open for a long time (e.g., weeks or even months)?

A: It is recommended to extend the drying time and select the highest power level suitable for the material.

The recommended drying time provided on the Dry Dock sticker and manual is based on materials（already dried）placed in an environment of 70% RH and 25℃ for 5 days.

If the materials have been opened for several weeks or more, the moisture content in the materials is generally higher than in that scenario.

For selecting the power level, If using Polymaker materials, The table in Q&A 1 can be used as the reference to determine the highest power level. If using materials from other brands, please check the softening temperature of the filament first before using a higher power level.

Based on experience, for materials that have been opened for a long time, setting the drying time to 2-3 times the standard drying time (3 times for PA and PVA materials is recommended) often provides good drying result. For example, the recommended drying time for PLA is 6 hours, it can be set to 12 hours in this case.

6. Q: Can PETG materials be dried with other drying settings?

A: Regarding Polymaker PETG materials, the softening temperature of the filament is ~80℃, and power Level 3 can be used for drying. If using PETG materials from other brands, please check the softening temperature of the filament firstly. If its softening temperature is below 75℃, there is a risk of filament softening.

7. Q: Can PVB materials be dried with other drying settings?

A: Regarding PolySmooth™ and PolyCast™ materials, with a filament softening temperature of ~70℃, power level 2 can be used for drying. If using PVB materials from other brands, please check the softening temperature of the filament first. If its softening temperature is below 65℃, there is a risk of filament softening.

8. Q: Hot air blows to one side of the material during drying, is there method to improve drying uniformity?

A: The PolyDryer™ utilizes a high-speed fan to evenly distribute heat in the PolyDryer™ Box, so materials can generally be dried evenly. However, the temperature difference between the Dry Dock air outlet and return air outlet still exist, due to heat loss when heating the material and air inside the PolyDryer™ Box. To further improve drying uniformity, after drying for some time, you can rotate the PolyDryer™ Box for 180 degrees and put it back on the Dry Dock to continue drying.

9. Q: During drying, if some silica gel desiccant turns pink from blue, is it normal?

A: Yes, it is normal. When the hot air removes moisture from the material, the silica gel desiccant partially absorbs the moisture to improve drying efficiency, which is one of the main functions of the desiccant in the PolyDryer™ Box. After continued drying, it is also possible to observe some desiccant turning back to blue from pink (especially when using power level 3). This indicates that there is less moisture inside the PolyDryer™ Box, and the hot air is simultaneously drying both the material and the silica gel desiccant.

10. Q: During drying, if the humidity meter shows that the relative humidity initially increases and then decreases, is it normal?

A: Yes, it is normal. When moisture is removed from the material by the hot air, it initially causes an increase in the humidity inside the PolyDryer™ Box. Depending on the initial

moisture content of the material, this stage may last for several tens of minutes to several hours. As moisture is continuously removed from the PolyDryer™ Box or absorbed by the silica gel desiccant, the relative humidity decreases. This phenomenon indicates that the material is drying.

11. Q: How long can the drying state of materials placed in the PolyDryer™ Box be maintained?

A: The PolyDryer™ Box is designed with excellent sealing capability, further enhanced by the silica gel desiccant to extend the storage time. In an internal experiment conducted by Polymaker, under an environment of 20℃ and 60% RH, the relative humidity inside the PolyDryer™ Box changed less than 5% within 30 days. If we evaluate the sealing of the storage box based on the amount of moisture transmitted from outside to inside per unit time, i.e., the less moisture transmitted, the higher the sealing capability. The sealing capability of the PolyDryer™ Box is ~7 times that of the PolyBox™ and ~1.5 times that of a DIY PP drying box.

12. Q: When materials are placed in the PolyDryer™ Box, is it normal for the relative humidity shown by the humidity meter to be equal to or higher than 30% before drying begins?

A: Yes, it is normal. The PolyDryer™ Box is an accessory of the PolyDryer™ and reducing the internal relative humidity mainly depends on the hot air from the Dry Dock, with the original desiccant in the PolyDryer™ Box playing a supporting role. The main functions

of the desiccant in PolyDryer™ Box are 1. to absorb some moisture during drying and improve drying performance, and 2. to absorb a small amount of moisture during storage to extend the time that the material remains dry.

We strongly recommend using the PolyDryer™ Box with the Dry Dock. If you intend to use the PolyDryer™ Box as a standalone 3D printing filament storage box, you may need to add an appropriate amount of additional desiccant.

13. Q: After completing the drying, to what level does the relative humidity in the PolyDryer™ Box can achieve?

A: The final state after drying is related to the drying setting, initial moisture content of the material, external environment, etc. The following data are based on an internal experiment by Polymaker and are for reference only. In an environment of 20℃ and 60% RH, using the recommended power level and twice the drying time, PLA, PETG, and PC materials placed in an open environment for 2 weeks were dried. With power level 1, the final relative humidity was between 20-30%. With power level 2, it was between 15-25%, and with power level 2, it was between 10-20%.

14. Q: When some desiccant in the PolyDryer™ Box turns pink, what is the fastest way to dry the silica gel desiccant?

A: If only part of the silica gel desiccant turns pink, there is no need to dry the desiccant. If more than 30% of the desiccant turns light pink, drying is recommended. Three recommended methods are:

1. Remove the silica gel desiccant from the PolyDryer™ Box (without including any other parts) and place it in a heat-resistant container. Use an oven to heat at 110-130℃ for 1-2 hours until the desiccant turns blue.

2. Remove the silica gel desiccant from the PolyDryer™ Box (without including any other parts) and place it in a heat-resistant container. Use a microwave, select a low power level, heat for 30 seconds, then flip the desiccant, and heat for another 30 seconds until the desiccant turns blue.

3. Place the PolyDryer™ Box without the filament on the Dry Dock, use power level 3 and dry for ~8 hours until the desiccant turns blue. The desiccant should be placed in the same orientation as the screen on the Dry Dock (as shown in the photo below), which facilitates the hot air blowing onto the desiccant and improves drying efficiency.

15. Q: Does the PolyDryer™ support drying while printing?

A: Yes, the PolyDryer™ has a continuous drying mode. Materials can be pre-dried on the PolyDryer™ for a period, and then the PolyDryer™ can be set to continuous drying mode for drying while printing.