

Drying Guide

The What2Print Dry Filament Guide

How to Store, Dry, and Save Your Filament from Moisture

Your secret weapon against stringing, weak prints, and nozzle clogs.

A free resource from what2print.com

The Silent Print Killer: Moisture

You've spent hours calibrating your printer and slicing your model, only to find the final print is stringy, brittle, and covered in zits. The culprit probably isn't your printer—it's **wet filament**.

Most 3D printing filaments are **hygroscopic**, a fancy word meaning they actively absorb moisture from the surrounding air. When this wet filament passes through your hotend, the trapped water instantly boils into steam. This tiny explosion causes a host of problems.

Symptoms of Wet Filament:

- **Audible Popping/Cracking:** You can literally hear the water turning to steam as the filament extrudes.
- **Terrible Stringing & Oozing:** The steam pressure pushes out excess filament, creating webs.
- **Rough or "Fuzzy" Surface Finish:** The texture looks uneven and unprofessional.
- **Weak, Brittle Prints:** The steam creates voids within the filament, compromising layer adhesion and part strength. You might be able to snap the print with your bare hands.
- **Nozzle Clogs:** The inconsistent extrusion and steam can lead to more frequent jams.

The what2print Rule: Keeping your filament dry is as important as leveling your bed. It's a foundational step for quality printing.

Which Filaments Need the Most Care?

Not all filaments are created equal. Some are like sponges, while others are naturally resistant to moisture. Knowing where your material falls on this list will help you prioritize your storage efforts.

[Icon: Water Droplets]

Extremely Hygroscopic (Dry These Religiously)

These materials can be ruined in a matter of hours if left in a humid environment.

- **Nylon (All variants):** The king of moisture absorption. Always dry before use.
- **Polycarbonate (PC):** Very sensitive. Requires high drying temperatures.

- **TPU (Flexible):** Acts like a sponge. Wet TPU is a stringy nightmare.
- **PVA (Soluble Support):** Designed to dissolve in water, so it soaks up ambient moisture incredibly fast.

Moderately Hygroscopic (The Common Culprits)

These are the most common filaments that cause issues. Good storage is essential.

- **PETG:** Famously prone to stringing when wet.
- **ABS / ASA:** Will absorb moisture, leading to weak parts and surface blemishes.
- **PLA:** While less sensitive than PETG, it absolutely absorbs water over time, becoming brittle and printing poorly. Don't underestimate PLA's ability to go "wet"!

Low / Non-Hygroscopic (The Easiest to Handle)

These materials are much more forgiving, but good storage is still a best practice.

- **Polypropylene (PP):** Very resistant to water.
 - **Metal/Wood/Carbon Fiber-Filled Filaments:** The base material (often PLA) is hygroscopic, but the additives can change its properties. It's always safest to assume they need to be kept dry.
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How to Keep Filament Dry (Good, Better, Best)

The best way to fix wet filament is to never let it get wet in the first place.

GOOD: The Basic Method

- **Use the bag it came in!** Most quality filaments come in a resealable, vacuum-sealed bag with a small desiccant packet. Get all the air out and seal it tightly after each use.
- **Large Ziploc Bags:** If the original bag is damaged, a heavy-duty freezer bag is a decent substitute.

BETTER: The Hobbyist Standard

- **Airtight Bins + Desiccant:** This is the what2print recommended method for most users.
 - **Get It:** Buy a large, gasket-sealed plastic storage container (like those for food or pet food).
 - **Add Desiccant:** Throw in several large packs of **rechargeable desiccant**. These often have indicator beads that change color when they are saturated, letting you know it's time to "recharge" them (by baking them in an oven).
 - **Add a Hygrometer:** A small, cheap digital hygrometer inside the box will tell you the exact humidity level. Aim for **under 20%**.

BEST: The Professional Setup

- **Vacuum Storage Bags:** These are designed for clothing but work perfectly for spools. You use a vacuum cleaner to suck all the air out, providing the ultimate seal.

- **Dedicated Commercial Storage Systems:** Companies sell purpose-built filament storage boxes that are sealed and sometimes even heated to maintain an ultra-low humidity.
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My Filament is Wet. Now What?

Don't throw it out! You can rescue most wet spools by actively drying them.

GOOD (but use with caution): The Kitchen Oven

Ovens are not precise and can easily melt your filament or the spool itself if you're not careful. **PROCEED AT YOUR OWN RISK.**

- **Preheat CAREFULLY:** Set your oven to its lowest possible temperature, well **BELOW** the filament's glass transition temperature (see chart on next page). Use an oven thermometer to verify the actual temperature.
- **Ventilate:** Crack the oven door slightly to allow moisture to escape.
- **Dry:** Place the spool in for 4-6 hours.
- **WARNING:** Never leave it unattended. Ovens can have hot spots and temperature spikes. A melted spool can ruin your oven.

BETTER: The Food Dehydrator

This is a much safer and more effective method than an oven. Dehydrators are designed to run at low temperatures and circulate air, which is perfect for removing moisture.

- **Modify if Needed:** You may need to cut out the center of some trays to fit a 1kg spool.
- **Set Temp & Time:** Set the temperature according to the chart (next page) and let it run for 4-8 hours, or even overnight for very wet filaments like Nylon.

BEST: The Dedicated Filament Dryer

This is the most reliable, set-and-forget solution. These are purpose-built appliances that hold one or two spools at a precise temperature and circulate air. Many even let you print directly from the dryer.

The What2Print Drying Cheat Sheet

Quick Reference: Drying Temperatures & Times

Use this as a starting point. Very damp filament may require longer drying times. **Never exceed the recommended temperature, as you risk fusing the filament on the spool.**

Filament	Drying Temperature (Celsius)	Drying Temperature (Fahrenheit)	Minimum Time
PLA	40°C - 45°C	104°F - 113°F	4+ hours
PETG	60°C - 65°C	140°F - 149°F	4+ hours
ABS / ASA	70°C - 80°C	158°F - 176°F	4+ hours
TPU	50°C - 55°C	122°F - 131°F	6+ hours
Nylon / PC	70°C - 85°C	158°F - 185°F	12+ hours

Data is for food dehydrators or dedicated dryers. Use extreme caution with kitchen ovens.

Dry Filament = Happy Printing!

Mastering filament management is a hallmark of an expert 3D printer. By investing in a simple, dry storage solution and knowing how to rescue a wet spool, you'll save yourself countless hours of frustration and failed prints.

Now go forth and print with confidence!

- The Team at **what2print**
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