BEST PRACTICE:

DRYING SPARSE FDM PARTS

Stratasys®
3D Printers and Production Systems

Overview

When sparse FDM parts are placed into a support removal tank, they can fill up with solution from the tank and water from the rinse. Most of this solution or water will drain from parts naturally within 30 minutes of their removal from the tank. However, in some cases, geometry will trap some liquid inside. Later, this liquid will slowly leach out. To avoid this, Stratasys recommends using a vacuum and/or oven to completely remove any liquid from your FDM parts. The best method is to use the vacuum first, followed by the oven. Either method can be effective individually if you increase the amount of time the part is in the oven or the number vacuum cycles applied to the part.

Note: For some applications, it is critical that even solid parts have all of the moisture removed after being in the support removal tank. In these situations, use the steps in the oven-drying section of this document.

Rinsing the part is critical to remove any surface residue.

Process

Rinse: It's critical to rinse parts well after removing them from the support removal tank to ensure no residual support removal solution remains on the surface. Place each part under a stream of hot running water and use a sponge, brush or your hand to physically scrub the part while rinsing. (It may also be necessary to rinse parts again after the initial drain, vacuum chamber and oven.)

Drain: Once each part has been rinsed well, allow most of the liquid to drain away by gravity. For larger parts, this may take up to 30 minutes. Quickly rinse parts again under hot water to remove any remaining residue.

Use a liner or shop towel to absorb any excess water in the vacuum chamber.

Vacuum Chamber

Step 1:
Prepare the vacuum by using a liner, shop towel or rag to absorb any liquid that will be pulled from within the parts. It can also be helpful to wrap each part in a shop towel or rag to absorb liquid as it is expelled.

Step 2:
Place the parts in the vacuum chamber and pull a vacuum to around 30 torr (4 kPa).

Note: If the part is not wrapped with a towel, you will see liquid and foam being pulled from the part.

Step 3:
Once the desired vacuum is reached, return the chamber to ambient pressure. Repeat this procedure two to three times to remove as much liquid as possible.

Step 4:
Remove the parts from the vacuum chamber and rinse them again briefly under hot water. Wipe the parts down with a clean towel.

Use the vacuum chamber for multiple cycles to pull water out of the part.

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Oven Drying

Step 1:
Set oven to 70°C (158°F)

Step 2:
Wrap each part in a shop towel or rag to absorb any moisture as it evaporates from the part.

Step 3:
Place the parts in the oven. Leave smaller parts in for about an hour; larger parts require 1.5 to 2 hours.

Step 4:
Remove parts from the oven and use a damp towel to wipe each part down, removing any residue.

Check Your Work

After drying the parts completely, you can use an air compressor with a basic blow-gun tip to check for any remaining moisture. Simply blow air on the part at a close range and observe whether any moisture is expelled from any portion of it.

Set the oven to 70°C.

Wrap the part to absorb moisture and place it in the oven for 1 to 2 hours.

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