

# MatterHackers

## Acetone Vapor Smoothing

Acetone vapor smoothing is a process for smoothing the surface of ABS prints. It can make your prints look like professionally made injection molded objects.

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## INTRODUCTION

Acetone is a powerful solvent that quickly dissolves ABS. However, the ABS reconstitutes itself once the acetone has evaporated. This phenomenon is used for welding ABS drain pipes (ABS glue is mainly acetone). It also allows us to use ABS juice to apply a thin film of ABS to the print bed to help with adhesion.

Acetone vapor smoothing uses gaseous acetone to dissolve the surface of a print. This blends the layers together and results in a smooth shiny finish. Since acetone evaporates quickly even at room temperature, this process can be done slowly without any heating. However, to accelerate it we are going to use a hot plate to boil the acetone. This way the process will only take 15 minutes.

### TOOLS:

- [Hot Plate](#) (1)
- [Digital Thermometer](#) (1)

### PARTS:

- [Acetone](#) (1)
- [Paint Can](#) (1)
- [String](#) (1)

## Step 1 — Get the stuff you need



- Acetone
- An empty paint can
- A hot plate
- String

## Step 2 — Suspend your print inside the can



- Find a way to tie some string to your print, in order to hang it.
  - For this example I am using a fan shroud from a TAZ. It has holes on the back for screwing bolts into. I screwed a bolt into one hole and then tied the string to the bolt.
- ⚠ Remember that the string will get stuck to any part of the object it is touching.
- I tied another piece of string across the top of the can. This is what the part will hang from.
  - The part should be suspended roughly in the center of the can. Make sure it is high enough that it won't be touching the acetone we will pour in.

### Step 3 — Pour some acetone into the can



- Pour about a 1/2" of acetone into the bottom of the can.
- Make sure that you add enough acetone so that it will not run out before the process is complete. This is important because the cooling action of the vaporization stabilizes the temperatures inside the can. If it runs out of acetone, the temperature will rise and any acetone absorbed into the part will boil out and create bubbles.
- Also make sure that the part is not touching the acetone and that it is high enough not to get splattered by the boiling action.

## Step 4 — Heat for 15 minutes



⚠ Do this in a well ventilated area.

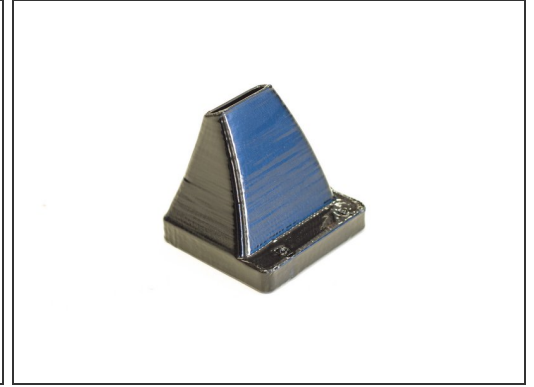
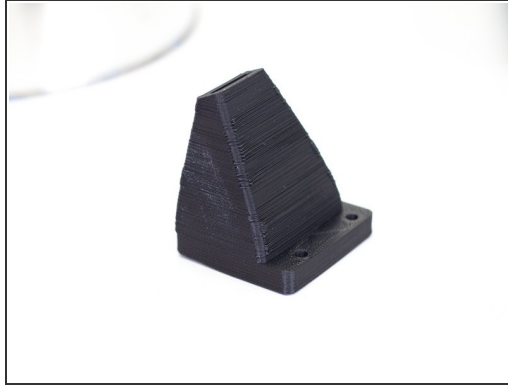
- Place the lid on the can.

⚠ Do not seal the lid tightly. If the vapor cannot escape, the can will explode.

- We drilled a hole in the lid to act as a vent and also to allow us to insert a temperature probe.
- Place the can on the hot plate and turn on the heat to the lowest setting. When set to "Warm" our hot plate kept the temperature stable at 55 °C (130 °F).
- Set a timer for 15 minutes and check the print every 5 minutes.

⚠ DO NOT BREATHE THE ACETONE VAPORS

## Step 5 — Set the part aside to solidify



- After 15 minutes, turn off the heat, take the part out, and hang it somewhere to dry.
- Do not wait longer than 15 minutes. After 20 minutes it will start to develop boils.
- The part will be very soft and tacky now. Do not touch it. Give it about 30 minutes to solidify.
- If you decide it isn't smooth enough yet, wait for it to solidify and then repeat the process.