

# Surface Treatment for 3D Printed Parts (ABS material) Rev02

Written by CEDUX, inspired by other MAKERS

With an Acetone steam bath you can treat your 3D printed parts. It smoothens the surface and might also enhance the strength due to reduced stress concentration between two print layers. The shiny surface could also serve for aesthetical aspects.

## Minimal PRECAUTIONS

- Use gloves
- Protect your eyes
- Aerate your working area well

## Tools/Material required

- Pan with water
- Acetone (e.g. from pharmacy)
- Marmalade glass with screw lid
- Wire

## Process

- Hang up your 3D printed part with wire
- Add max. 1mm Acetone into the marmalade glass (actually you need much less)
- Place the 3D part into the glass resp. the lid loosely on the glass (there is no need to screw the lid on)
  
- Heat up the water in the pan until it boils well
- Take the pan away from the fire
- Place the marmalade glass into the water bath. Let the heat transfer from the water to the Acetone
  
- Wipe away the condensed water on the glass to see the process inside the glass
- After a short while you will observe:
  - the Acetone begins boiling (not always)
  - the 3D part becomes shiny/wet
  - the Acetone condenses on the inner side of the marmalade glass
- Pull the 3D part carefully out. Do not touch it for a minute so the Acetone can evaporate and the surface hardens again.

## Best practice

- Long parts (see pictures) are "steam bathed" best in horizontal direction. Positioned vertically, the Acetone vapour condenses in the lower sections only. The upper sections do not get enough vapour to be treated well.
- The rougher surface should be facing downwards (toward the Acetone puddle). The vapour condenses there first and smoothens the surface better.
- "steam bathing" once = evening the surfaces and corners
- "steam bathing" twice = corners will be rounded off much more so if you have filigrane structures this might not be good.
- Some drilled holes in the 3D part became deformed slightly so I had to drill them again after the treatment
- Do not use wire from your florist around the corner. They are painted sometimes and decolour when in touch with Acetone.
- You can try to place some Acetone directly with a paint brush but you will quickly see you can't apply it regularly and the ABS surface will mess up
- You can use Acetone as a "glue" if some ABS parts brake.

- move the part up and down in the vapour bath and let it rotate. This will cause a convection in the containment and therefore the acetone vapour distributes better to all surfaces equally.

