

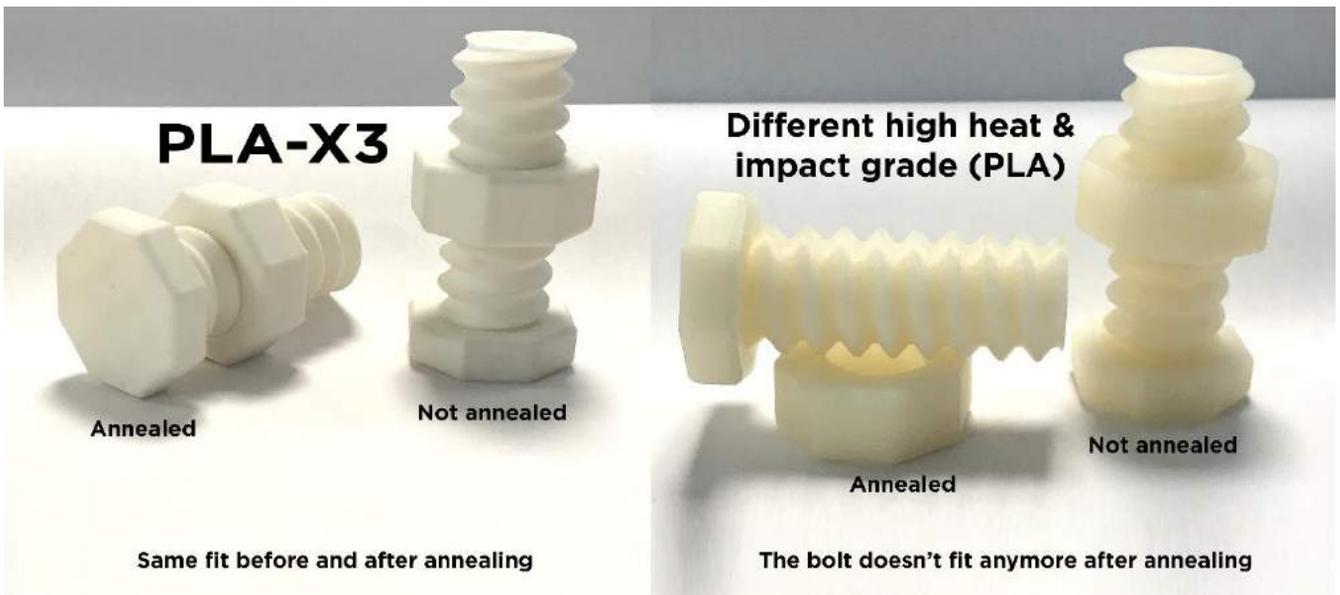
## What exactly is annealing:

The annealing of plastics can be defined as a secondary process wherein a plastic object is brought to a certain temperature, kept there for a time, and then cooled to room temperature.

The primary reasons for annealing a plastic object include the reduction or removal of residual stresses and strains, dimensional stabilization, reduction or elimination of defects, and improvement of physical properties.

Plastics are generally bad at conducting heat. This means that when an annealed object is cooled down too quick the annealing process will be disturbed which in turn re-introduces stress in the object. This can lead to deformation, shrinkage and / or other unwanted results.

Potential issues can be prevented by taking care that the annealed object cools down slowly.



## How to anneal:

Annealing objects made with PLA-X<sup>3</sup> is not difficult but has to be done properly for the best results. We have done a lot of tests and believe we've found the right settings to achieve success every time.

1. Pre-heat an convection oven at 110°C / 230°F (use a thermometer to calibrate the exact temperature)
2. When the oven is pre-heated, quickly put your printed object (tip; Keep the supports attached) in the oven and start a timer. *We recommend placing the object on a flat aluminum sheet or similar.*
  - For small objects with thin walls & medium infill set a 20-minute timer
  - For large objects with thick walls & medium infill set a 60-minute timer
3. When the object is done annealing, do NOT remove the object, but instead just turn off the oven. Now wait for the oven to cool down to room temperature. Please be patient as this can take a while.
4. Remove the object from the oven (remove the supports) and now you have a perfectly annealed PLA-X<sup>3</sup> print.

**“A higher infill percentage while printing with PLA-X<sup>3</sup> will result in even less shrinkage during annealing.”**

During the annealing process the already high crystalline PLA-X<sup>3</sup> material will (rapidly) crystallize further. In practice, this means that PLA-X<sup>3</sup> will become extra stiff at high temperatures.

The material has been developed for dimensional accuracy both before and after annealing which explains the low shrinkage that you will experience when working with PLA-X<sup>3</sup>.