



# Materials

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## xCE White Application Notes

### Introduction

xCE White is a tough rigid photopolymer that can be used to print end-use plastic parts and injection molding tools in relatively quick time. It has high flexural strength and exhibits long term environmental stability making it ideal for printing long lasting parts for applications in automotive industry, robotics, automation, and electronics.

### Storage Requirements

Optimal storage temperature for xCE White is between 15°C - 30°C. If the conditions are outside of these margins, it could result in loss of material properties. In general, store in original container away from direct sunlight in a cool, dry, and well-ventilated area. This material contains a white-pigment that is quite heavy and therefore will settle faster than other colors. **Mix xCE-White either in the container or the vat prior to printing if stagnant for more than 6-12 hours.**

# Printing Tips

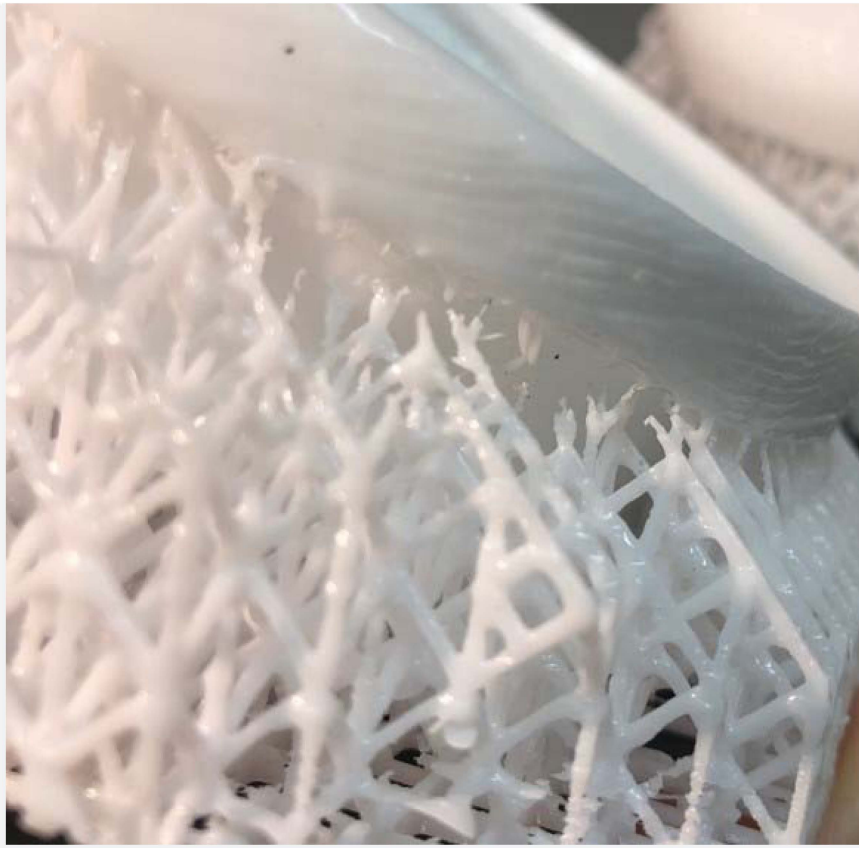
The default print settings for xCE White are reliable for medium sized constant wall thickness parts printed between 30-60° from horizontal. We recommend printing in *low-power* setting to minimize exotherm which in turn will lower the risk of interlayer delamination. xCE White has a tendency to overheat during printing, therefore make sure there's plenty of resin in the vat at the beginning of a print to negate the overheating effect.

Due to the low viscosity and the high green strength, xCE White is a good candidate for printing intricate designs with fine features and thin wall sections. Recommended minimum wall thickness for xCE White is 0.5mm, but with vertical orientation and no sudden change in cross-sectional area, you can achieve a wall thickness as low as 0.3mm. Do keep in mind that all important features of the part(s) should be facing the membrane during printing for best possible surface finish.

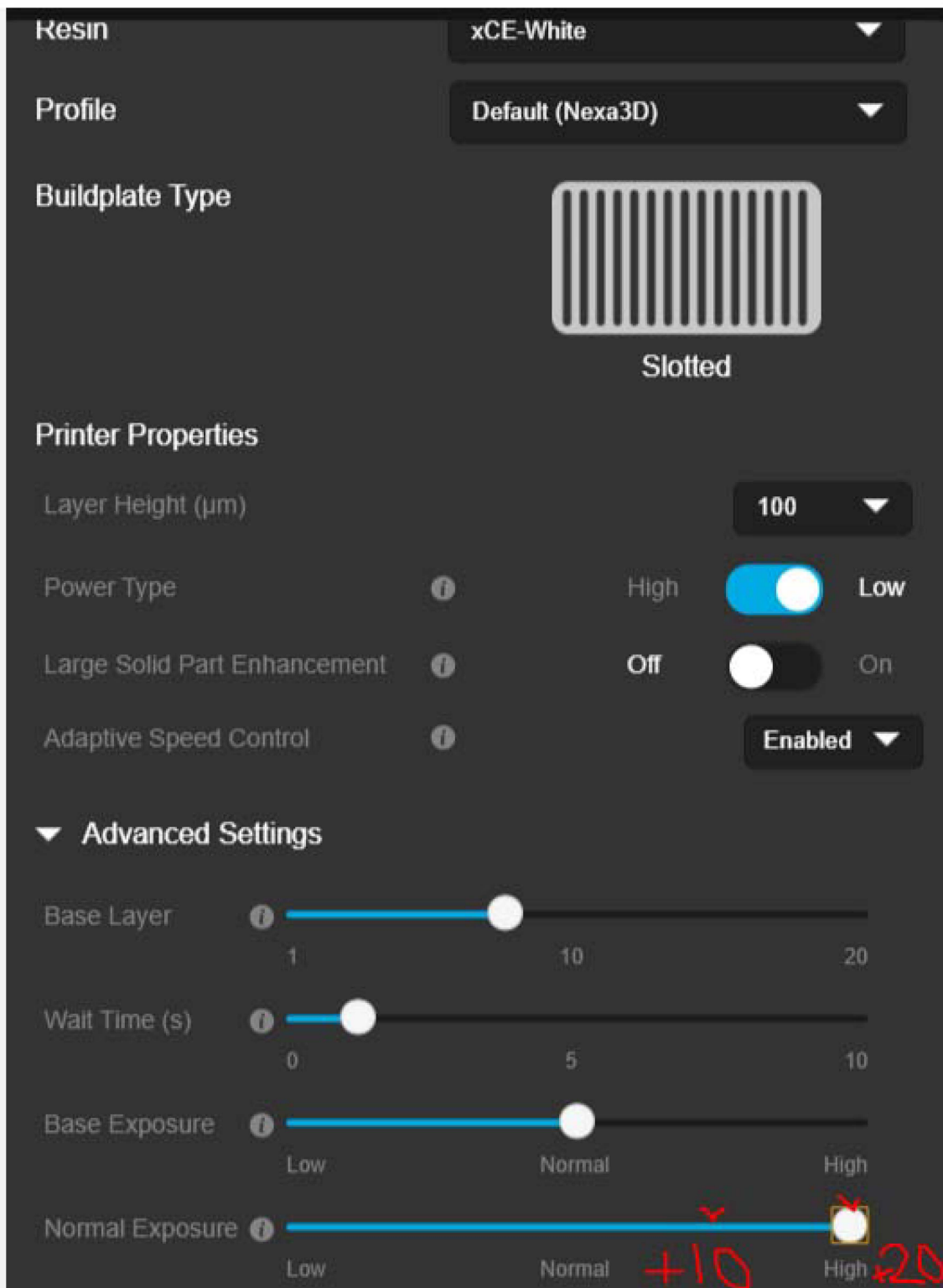
Waviness on part surface or delamination in supports is an issue that comes up occasionally with xCE White as the material ages. It is an indication that the parts are being under-cured during printing and it's mainly due to the non-yellowing UV blocker agents in the material formula making it less stable. **If parts are under cured due to resin aging, increase the *Normal Exposure* time by 10-20% (In NexaX *Advanced Settings*, slide *Normal Exposure* from *Normal* towards *High*.** Correctly cured xCE White parts should show a uniform-glossy finish that's easy to differentiate from under-cured parts.



*Difference between an under-cured part with wavy surface (left) vs correctly cured part with uniform glossy surface (right)*



*Support separation observed on an xCE White part due to under curing. Longer exposure times will correct the issue.*



Support separation is observed from time to time on medium to large size parts printed with xCE White. This is a result of peel forces acting on the rigid support structures causing the support tips to break off from the parts' surface. In addition to making the supports strength "strong", users can increase the *Contact penetration* (+0.1mm), decrease the *Unit cell size* (-1.0mm), and increase the *Minimum distance to part* (+1.0mm) to minimize support separation. Use of cones around the edges of the part is recommended for any large part (+100 ml of resin) to ensure build platform adhesion and higher print success.



*Default support settings for xCE White. Users can increase Contact penetration (+0.1mm), decrease Unit cell size (-1mm), and increase Minimum distance to part (+1mm) to minimize support separation.*

## Post Process Tips

Validated Workflows (based on 4mm tensile coupons)

Washing	Post Cure	Tensile Strength (MPa)	Tensile Elongation (%)

4min in xCLEAN bath (may be 2-stage)	90min in xCURE at room temp	75	4%
Rinse in Water and air-dry			

If parts are printed directly on the build platform, the slots on the platform will be imprinted on the down-facing skin and will require sanding to remove the stripe-like pattern. In general, xCE White supports can be easily removed and supported areas can be sanded off to get a nice clean surface finish. If you are dealing with thin wall parts, it is recommended to post-cure the parts with supports still attached so that the amount of deforming/warping can be controlled. When there is a large supported area, the most complete washing and curing can be achieved with supports removed.

## Washing

- xCE White parts should be put through 2 xClean baths (dirty and clean) for 1-2 mins each. Parts can then be rinsed off in water or IPA as the final bath.
- Make sure the parts are completely dry before post-curing them in the xCure unit.

## Curing

- 90min with UV only in the xCURE is recommended.
- Post cure parts with supports still attached so that they will hold their shapes + minimize deformation during post-curing (parts <2mm wall thickness).
- Heated curing and extended cure time may help improve cure depth on thick parts (>4mm wall thickness).