envisionTEC

Technical Guide

DLP: Local Light Sources

Learn more about how to protect your workspace from potentially damaging effects caused by local lighting. The information in this guide is suggested in the event where local light sources are negatively affecting the 3D printing workflow. These steps will help ensure material does not cure outside of the 3D printing and post-curing process.

Applicable Printers: DLP and cDLM printer families

Primary Supplies

UV filtering light sleeve (optional)
UV cut-off film filter (optional)

Getting Started

EnvisionTEC materials are sensitive to actinic light, which covers UVC, UVB, UVA and visible parts of the light spectrum.

What is actinic light?
Actinic light is the type of light that causes photosensitive compounds, such as EnvisionTEC materials, to show signs of reactivity (curing / hardening).

These photosensitive compounds can cure EnvisionTEC materials when they are exposed to ambient light in some offices. The purpose of this guide is to protect materials from excessive exposure to ambient light, including indoor lighting and sunlight.

1 Storing materials between use
Storing material when not in use is the simplest way to protect the material from actinic light -

Storing material in a container
Keep the material stored in a fully sealed separate container once it's been removed from its original bottle. This separate storage container must be opaque so no light can travel through it. It must be clean from any debris or residue - *see the Resin Handling Technical Guide for more information*. Excess cured material or exposure to dust may contaminate the material and cause its reactivity to change. This may result in failed prints. ***The separate container must be stored indoors at room temperature, away from sunlight and harsh temperature changes.*** Storing material storage containers in an incubator in not recommended. Storing material at consistently high temperatures (roughly 125 degrees Fahrenheit) for extended periods of time can shorten the lifespan of the material

2 Be mindful of the hood
Keep the hood of the printer closed as often as possible, even when the printer is idle or powered off. This small step goes a long way to help protect the printer from the following -

A) Light exposure
If the material tray is installed in the printer while the hood is open, material in the material tray may react to the ambient light, causing partial curing

B) Dust exposure
Particles of dust may enter into the material tray. Dust can contaminate material and accumulate over the projector optics and other areas that need to be kept clean for peak performance

3 Windows
Do not place the printer or any printing workspace near windows -

A) Distance printing equipment
Place all printing equipment at least 5 to 6 feet or 1.5 - 2 meters from the nearest window. Situating the printer or post-processing workspace too close to the window can cause the exterior environment to change the printer's temperature, causing overheating / extreme cooling. Exterior light can also cure material in the material tray. The fluctuation in temperature and the effects of the direct light make window spaces one of the most unstable for consistent print results

B) Cover the glass
The best way to protect your print space from exterior light is to use a UV cut-off film filter. This filter is usually sold on a roll and can be cut to fit the window. UV cut-off film filters can be purchased from Amazon -

http://bit.ly/Amazon-UVfilm

4 Ambient light
LED and fluorescent light sources can be used in the printing workspace. It is important to consider the total amount and intensity of actinic light that comes in contact with the material -

A) Light to material distance
The distance between each light source and the working area plays a very important role. If the light source is too close to the working area, excess material may cure in the mateiral tray. This can be found in labs with under-the-cupboard lighting. Consider relocating all immediate light sources to increase the distance and allow the light to disperse before coming into contact with the printer

B) General light intensity
If the lighting cannot be moved and is too strong, yellow light filters can be used over existing lighting. This type of filter is cylindrical and can be installed over the fluorescent tubes or applied to lights by adhering pieces cut from sheets -

http://bit.ly/Lithoprotect-UVfilter