Tips & Tricks for Glass & Acrylic

On UV-Cure Printers

Glass, acrylic, and other similar clear media present unique opportunities and challenges for printing with UV-curable inks. This document describes a number of recommended techniques to get the most out of your Designjet H35000/H45000 Series, (ColorSpan 5400uv Series) UVR or UVX printer and these media types.

General Guidelines

The primary consideration for glass and most other clear media is that these media do not provide a surface with good adhesion properties. Adhesion is the measurable degree to which cured ink attaches to the media surface. When the surface is very smooth, like glass, adhesion typically is reduced. Low adhesion increases the ease with which the cured ink could be scratched from the surface. Fortunately, most applications involving clear media provide an easy solution to this problem: print the file reversed (mirror imaged) on the "back" of the media, then display the finished piece so that the unprinted side faces out. The ink will be protected from the elements, passersby, etc.

Printer Preparation

Printer Settings
Generally a glass or acrylic sheet will require a low pinch roller setting on the UVR or UVX. The H35000/H45000 Series will set pinch roller tension automatically. Some experimentation may be needed to determine the best setting on UVR or UVX. The platen vacuum typically can be reduced or turned off completely, as the fans will not have any significant effect. If the printer has difficulty getting traction, you may need to apply a backing/mask of some kind on the back of the media that the grit rollers can bite into.

Print Mode
Because these media are very smooth, it is more difficult for the grit roll advance system to grab the media and move it. High Quality mode, because it requires the smallest move each time, is recommended in order to reduce slippage that would affect print quality.

Printer Calibration

Calibrating the printer on clear media is difficult to complete manually and impossible for the automatic Image Sensor. Complete the following calibrations on an opaque media prior to loading the clear media.

Bidirectional Calibration
If practical, use an opaque media that is the same thickness as the desired clear media. Set the carriage height relative to this media and perform either AutoBiDi or Manual Bidirectional registration. If no opaque media of the same thickness is available, carefully set the carriage height relative to whatever opaque media is available and perform the calibration. When the clear media is loaded, adjust the carriage height to be the same distance as it was from the opaque media. Use the supplied head height gauge and the technique described in the printer's *User Manual* to adjust the carriage height.

Jet Mapping
After completing the Bidirectional calibration, perform the jet mapping calibration (either Manual Jet Mapping or AutoJet) on the same opaque media.

Media Advance Calibration
While bidirectional calibration and jet mapping can be performed successfully on another type of material, the media advance calibration must be performed on the same type of media that will be used for printing. There are two approaches that can be used: one, use a sheet that has a release liner still protecting the printable surface, or apply transfer tape, such as that used in cut-vinyl lettering applications. Print the media advance calibration pattern on this release liner, make the necessary adjustments/data entry to the printer, and then remove the liner for production printing. Alternatively, if a scrap piece of media of the same dimensions (length, width, thickness) is available, the media advance calibration may be performed on that sheet instead.

Once the calibration has been performed, take note of the Media Feed Number (MFN) displayed on the printer's control panel and the end of the calibration. This MFN can be entered again in the future when printing on the same material, eliminating the need to reprint a calibration pattern. Note that the MFN is specific with regard to sheet dimensions and to print mode. A separate calibration will need to be performed to obtain valid MFNs for each desired print mode.

Media Preparation

On the Designjet H35000/H45000 Printer series (ColorSpan 5400uv Series) and UVR-UVX series of printers, the media is pulled through the printer by the action of gritted rollers biting into the bottom surface of the media. This method could leave undesirable marks on the media, so some means of protecting the bottom surface is recommended. Any release liner already present on the media should be left in place, or transfer tape can be applied to the bottom surface for protection. If no such protection is available, be sure to load the media from the input side (back) of the printer, to minimize any travel over the stationary grit rollers.

Cleanliness

For best results the media must be thoroughly cleaned before printing. Wiping down the media surface with alcohol will remove any particles and also reduces any static electricity buildup on the media that could affect print quality.

Server Preparation

If using an HP print server, we recommend the Backlit color profile. This delivers an ink saturation that produces good results for most applications involving glass, clear acrylic, or similar media.

If using a third-party print server, similar settings that use a generally higher ink limit are suggested. Some trial-and-error and experimentation may be required to find the best color settings for your specific media and application.

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