

Sublimation Troubleshooting Guide

Sublimation: Troubleshooting 101

Creating beautiful, durable sublimation products is easy and fun – or so you were told when you purchased your system. Sublimation is a tried and true business, but like anything, there is an equation for creating the beautiful, durable and profitable pieces that your customers clamor for. There may come a day when you print an image and your color is wrong or your output looks banded. Troubleshooting color, printer or software problems can be a daunting task due to the many variables that affect your image output – from the way you designed your graphics to temperature of your heat press. Using the following tips, you should be able to easily find the root of the issue and resolve it putting you back on the path to profit in no time.

RGB vs. CMYK

One of the most common issues is color output. How do you get what you see on the screen to print and transfer onto your substrate? First let's look at how your "screen" understands color. Your color monitor produces color by starting with black and adding specific combinations of Red, Green and Blue light. Every monitor adheres to a certain color gamut or range of colors that it can produce based on these combinations of Red, Green and Blue known as RGB values. Your printer produces color by starting with the reflective surface of white paper and lays color down to subtract degrees of red, green and blue light. Printers use Cyan, Magenta and Yellow inks along with the addition of Black ink to make color in this way. So it would seem that your monitor's inherent RGB color space and printer's inherent CMYK color space are incompatible. This is not the case if you use the color correction tools provided by your ink manufacturer properly. Whether your ink manufacturer provides a profile or a printer driver, these tools have been developed to aid in the translation of RGB colors of your color monitor to the CMYK colors of your printer. Whether you scan an image or upload it from your digital camera, ensuring that it is an RGB bitmap is an important part of the color puzzle. What about artwork created in your graphics program using spot colors, how do you match that? The majority of ink manufacturers provide a spot color palette that you can print and transfer onto a substrate. Many palettes have the RGB values associated with the color, so all you have to do is enter the value into your graphics program and fill your artwork. By using this palette your customers can select their colors with confidence.

The Impact of Paper

Color output and transfer quality can be greatly affected if the paper you are using is not recommended by the ink manufacturer/reseller. You may end up with light colors, a mottled appearance or inconsistent coloration from one image to the next if you are not using the correct paper. Most sublimation papers have a correct side for printing. Printing on the wrong side of the paper may result in splotchy or light results. The ink manufacturers/resellers test paper carefully to ensure that the output produced and heat transferred is vibrant and consistent. If you are unsure of what paper is best for sublimation, talk to your reseller or contact the manufacturer of your inks.

A Substrate by Any Other Name

A common misconception about sublimation is that all substrates are the same. A substrate is only as good as its coating. Sometimes, you will have to print and heat transfer to a substrate before you realize the coating is not all it's cracked up to be. At its basic level, the coating must be a polymer coating able to withstand the necessary temperatures of the heat transfer process, which are between 375° to 400°. The coatings of certain substrates should be considered before buying.

Mugs:

When selecting mugs; there are two schools of coatings, hard and soft. Soft-coated mugs are used with CLC transfer paper or dye-sublimation transfers. They must be heated at a much lower temperature than hard coated mugs. Hard-coated mugs are used for sublimation with digital transfer inks. The hard coating will handle the higher heat necessary for the transfer process without scorching, and without paper sticking.

Metal:

When selecting metals, be aware coatings may differ for many reasons including: scratch resistance; the ability to produce intense color; clarity; and the coating's likelihood to soften during heating. If the coating softens, the metal may appear to have a residue or matte appearance. Lowering the temperature or using an absorbent material, such as craft paper or a texture-free paper towel, over the metal will help resolve this problem. If you are unsure about what temperature to use when pressing, please ask your reseller or ink manufacturer. Your reseller should be knowledgeable about the coatings on the substrates they sell. You may want to ask for samples before you buy so that you can make an informed decision. Remember the coating is key for the sublimation process to work properly.

Printer Dilemmas

Another common problem that you may not take into account for color output is the printer. If you experience a shift in color, it may be that the nozzles of your print head are not firing properly. The nozzle check is one of your best diagnostic tools for your printer. If the pattern is broken a utility cleaning may need to be performed to restore the pattern. If you're unsure of how to print this, check your printer manufacturers manual for instructions.

Heat Transfer 101

Time is almost as important as the coating, temperature and pressure used during heat transfer of the image. Your reseller and ink manufacturer should be able to provide heat transfer guidelines, however generally these are only guidelines and may not take into account the small variations from system to system, so it may take a little experimentation to find the best time, temperature and pressure for your system. It is a good idea when you start printing and transferring to have inexpensive substrate material, such as polyester fabric or sheet stock metal that you can test. Time, temperature and pressure work together to complete the sublimation process. If your output results in any of the following then you may need to evaluate the time temperature and pressure used in the transfer process: splotchy or mottled images, blurry images, light images or incorrect color. It is not uncommon to vary times by as much as ten seconds beyond the guidelines provided by your ink manufacturer or reseller, however if the guideline for polyester fabric is 25 seconds and you are having to press 50 seconds to get acceptable output, other variables, such as the temperature and pressure may need to be assessed. There are commercial heat strips available on the market to aid in evaluating the consistency of your heat press.

Transfer Woes

Common problems that may occur when transferring the image can include

- **Ghosting**
- **Blow Through**
- **Image shift**
- **Residue**

Ghosting

Ghosting occurs when the transfer paper is only partially lifted from then laid back down on the substrate while the ink is still active and the substrate still hot. A faint duplicate of the image may mar the substrate. To prevent this, ensure the transfer is lifted evenly and quickly away from the substrate while it is still hot.

Blow Through

Blow through occurs when an image bleeds through the substrate. T-shirts are most susceptible to blow through. Precautions such as a Teflon sheet placed between the layers of the t-shirt will help keep the ink from bleeding through to the other side of the t-shirt. However, the most likely culprit of the problem is heat pressing for too long. Blow through can occur on hard substrates as well, it will not bleed through the substrate, instead your text or line art may appear blurry or fuzzy. Using the correct time during heat transfer is key to avoiding blow through on any substrate.

Image Shift

Image shift occurs when a transfer inadvertently moves during the heating process. Usually this happens because the transfer is not securely attached to the substrate. To help prevent this, keep the transfer paper larger than the substrate, center the image against the substrate and wrap the paper around it, securing the paper to the substrate with heat resistant tape. If you are using small substrates, such as bag tags or key fobs, you may consider printing a full sheet of these and using a spray adhesive to minimize shifting. To use the adhesive, lightly coat the transfer with the spray adhesive and place the tags or key fobs on the transfer. The spray keeps them secure and makes producing several at a time much easier.

Residue

Sometimes what seems to be a residue will appear on the substrate after pressing, this can occur on any metal, but is seen most on white aluminum. This is not a true residue, as it cannot be cleaned from the surface. It occurs when the coating softens during heat pressing. To resolve, try turning down the heat press 15-25 degrees. Also, leaving the transfer paper larger than the substrate and using an absorbent material between the heat press and the transfer will help prevent this problem. Understanding all the variables that affect the output of your image – the printer, software, paper, inks and transfer process affect – is the key to bypassing future frustration with the sublimation process. Knowing some basic troubleshooting tips enables you to quickly resolve issues that come up so that you can keep producing the beautiful, durable and profitable products your customer's desire.