

Cookbook

How to print colored traffic signage on
HP Latex 360 and 365 printers



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1 Overview

Supported printers, substrates, and rip

The recommendations of this document apply to the following printers:

- HP Latex 360
- HP Latex 365

The recommendations in this document apply to the following substrates:




- 3M™ Diamond Grade™ DG³ Reflective Sheeting Series 4000
- 3M™ Diamond Grade™ VIP Reflective Sheeting 3990 Series
- 3M™ High Intensity Prismatic Reflective Sheeting Series 3930
- 3M™ Engineer Grade Prismatic Reflective Sheeting 3400 Series
- 3M™ Diamond Grade™ Fluorescent Work Zone Sheeting 3924S Series
- 3M™ Advanced Flexible Engineer Grade Reflective Sheeting Series 7300

The only supported RIP for this application to be eligible for 3M™ MCS™ Warranty is:


- SAI FlexiPRINT & Cut Authorized 3M™ Traffic Edition

Application purpose

The recommendations of this document cover the following reflective application cases:

Description	Examples
<p>Long term regulated traffic signs using the following colors as per ASTM D4956 – 09^{E1} norm:</p> <ul style="list-style-type: none">• Green• Blue• Brown• Red• Purple• Black <p>Printed on white substrate.</p>	
<p>Temporary and Permanent regulated traffic signs for work zones printed with black color only with a colored background.</p> <p>The background color comes from the color of the film being used.</p>	
<p>Non-regulated, reflective signs, printed with regulated or custom colors.</p>	

The 3M™ MCS™ Warranty does not apply to the following:

Description	Examples	Recommended work-around
<ul style="list-style-type: none">• Regulated traffic or custom colors, printed on colored 3M™ Reflective Sheeting.• Printed traffic yellow on white 3M™ Reflective Sheeting		<p>Non-digital fabrication methods, such as use of:</p> <ul style="list-style-type: none">• 3M™ Screen Print Inks• 3M™ ElectroCut™ Film• cut applied copy of 3M™ Reflective Sheeting.

2 Before Printing

Download and install the substrate presets for the reflective substrate being used. Substrate presets can be downloaded either from the **media locator webpage** or by using the **Online Search** menu located on the printer front panel. For your convenience, a link to the media locator webpage is listed in the following section.

How to install substrate presets using media locator

To download and install substrate presets from the media locator to a Latex 3X0 printer follow the next steps:

1. **Open** a web browser **and visit the HP Media locator** page:

<https://www.printos.com/ml/#/medialocator/latex>







2. **Search for the substrate preset** filtering by:

- Printer: Latex 360/365
- Supplier: 3M Transportation Safety Division
- Application: Reflective signage

3. **Locate the profiles** designed for your substrate:

- DG 4000 Traffic Colors v3
- 3930 Traffic Colors v3
- 3990 Traffic Colors v3
- 3430 Traffic Colors v3
- 3924 Preset for Black Only Images v3
- 3M 7300 Traffic Colors v3

Make sure the profile name includes “v3” at the end.

Classification	Format	Manufacturer	Name
	Roll	3M Transportation Safety Di...	3M 7300 Traffic Colors v3
	Roll	3M Transportation Safety Di...	DG 4000 Traffic Colors v3
	Roll	3M Transportation Safety Di...	3930 Traffic Colors v3
	Roll	3M Transportation Safety Di...	3990 Traffic Colors v3
	Roll	3M Transportation Safety Di...	3430 Traffic Colors v3
	Roll	3M Transportation Safety Di...	3924 Preset for Black Only Ima...

4. Download the substrate presets from media locator:

Download media preset

Print model: **HP Latex 365** Firmware Version: NEXUS_01_12_00

RIP: OMES Resource Version: 6.1.1

Tested on	Classification	Printer settings
13-Nov-2017	Profilled only	Airflow: 180 Colors: CMYKcm Curing Temperature: 107 Cutter: Enable HP Latex Optimizer: 4 Ink Limit: 150 Input Tension: Inter-pass delay offset: 200 Load as: Self-Adhesive Vinyl OMAS: Enable Passes: 12 Vacuum: 80

CANCEL **DOWNLOAD MEDIA PRESET**

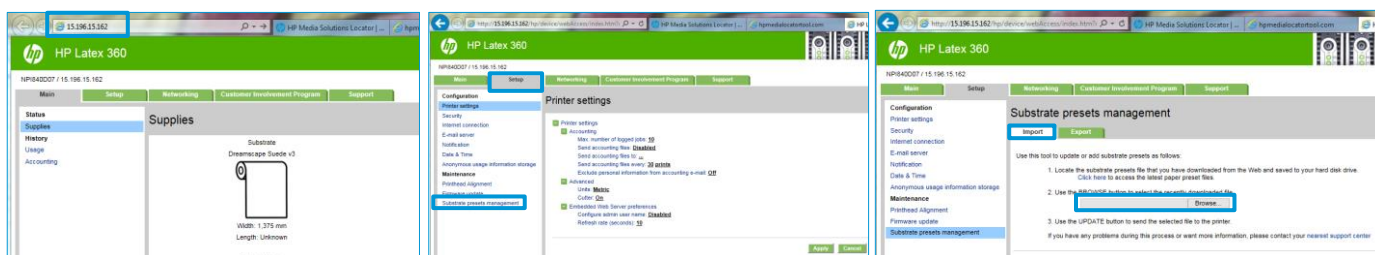
5. Install the substrate presets on the printer using the Embedded Web Server (EWS).

The process to install the substrate preset is:

1. Enter IP

2. Setup

3. Import and select substrate preset



Open a web browser and **enter the IP address** of the printer where the profile will be installed.

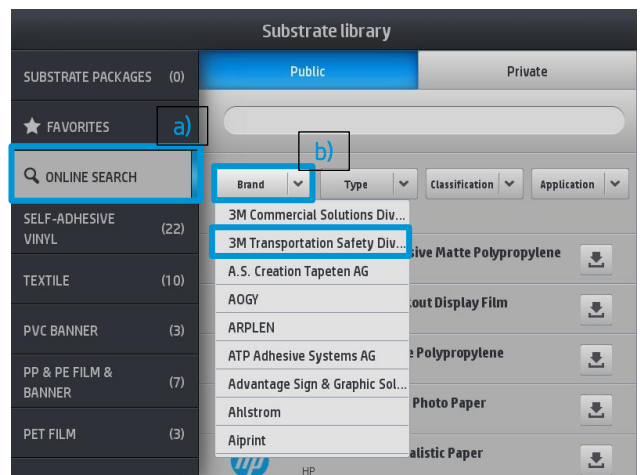
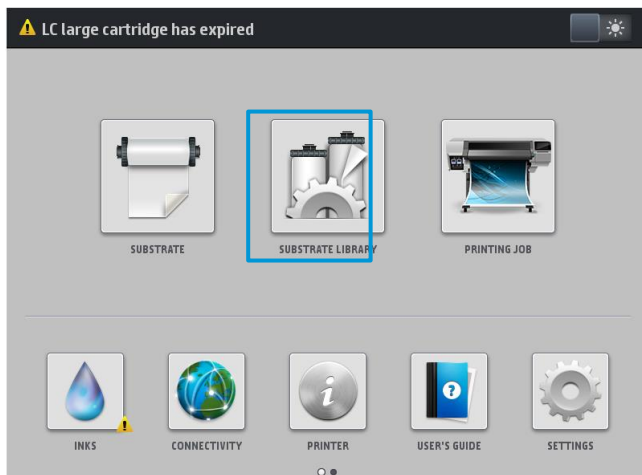
On the top menu select the **Setup** tab. On the vertical menu, select **Substrate presets management**.

Then **select Import** and, using the **browse** button, navigate to and **select the substrate preset** (an .oms file) that was previously downloaded from the media locator webpage.

How to install substrate presets using the “online search” from the printer’s menu

To download and install substrate presets from a Latex 3X0 printer follow the next steps:

1. Press the **Substrate Library** button on the main printer menu.
2. Select the (a) **Online search** option and (b) **filter** the results by **Brand** (3M Transportation Safety Division).



3. Select the substrate preset to download by clicking the **download icon**.

- DG 4000 Traffic Colors v3
- 3930 Traffic Colors v3
- 3930 Traffic Colors v3
- 3430 Traffic Colors v3
- 3924 Preset for Black Only Images v3



Make sure the profile name includes “v3” at the end.

4. The substrate preset will be **downloaded and installed automatically** on the printer.

How to install the SAi FlexiPRINT & Cut Authorized 3M™ Traffic Edition

Locate the activation voucher provided by SAi. Create an account at www.saicloud.com and activate the license. You will access a webpage where you will be able to download and install the software. The first time the software is launched, a setup window will ask for the printer model and, later, its IP address.

Find more detailed information at: <https://youtu.be/izQ5SxtuiR8> (for the HP Latex 360 and 365, the activation code is not included with the printer, as shown in the video, but should be provided by SAi).

The *SAi FlexiPRINT & Cut Authorized 3M™ Traffic Edition* comes with pre-installed presets for the HP Latex printers, which include the right color formulations to match Traffic Signage standards on 3M sheeting.

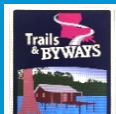


Once the RIP detects new substrate presets have been installed on the printer, it will request to synchronize.

After a few minutes the printer and RIP will be ready to print.

Substrate presets for 3M reflective substrates

Different substrate presets have been created to print signs on 3M reflective substrates. The table below helps in choosing the right substrate preset depending on the sign being printed.

Find more information about the 3M MCS warranties in the *Warranties* Section of this document.

Substrate	Substrate Profile Name	Information Signs (process colors) 	Temporary Traffic Signs (Traffic BLACK only) * 	Warning, Regulatory and Guide Signs (Traffic colors) 
3M 3924S	3M 3924 Preset for Black Only Images v3		✓	
3M 3430 Series	3M 3430 Traffic Colors v3	✓		
3M 3930 Series	3M 3930 Traffic Colors v3	✓		✓
3M 3990 Series	3M 3990 Traffic Colors v3	✓		✓
3M 4000 Series	3M 4000 Traffic Colors v3	✓	✓	✓

(*) The background color of the signal comes from the color of the film being used.

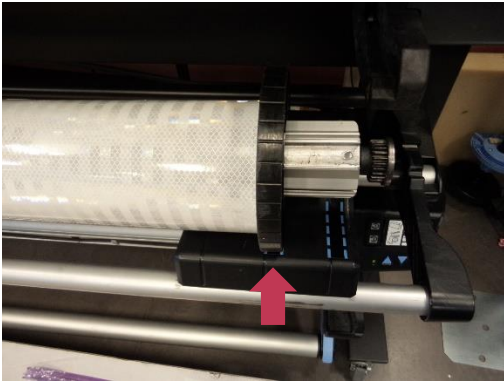
For Regulated Traffic signs, these are the **supported regulated colors** by substrate and **backed by 3M™ MCS™ Warranty for Traffic:**

Substrate	Traffic BLACK	Traffic RED	Traffic GREEN	Traffic BLUE	Traffic BROWN	Traffic PURPLE
3M 3430 Series	✓	✓	✓			
3M 3930 Series	✓	✓	✓	✓	✓	✓
3M 3990 Series	✓	✓	✓	✓	✓	✓
3M 4000 Series	✓	✓	✓	✓	✓	✓

3 Loading Substrate

When loading a 3M reflective substrate, HP advises following these recommendations:

- It is recommended to **load the substrate** in the second loading position.



- It is mandatory to **use edge holders** to print on reflective substrates.

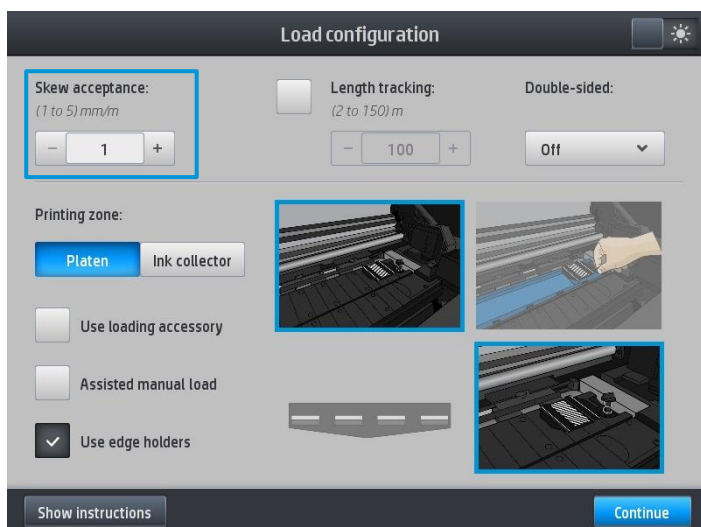


- Before printing, advance the **substrate** until it shows up in the output bin.

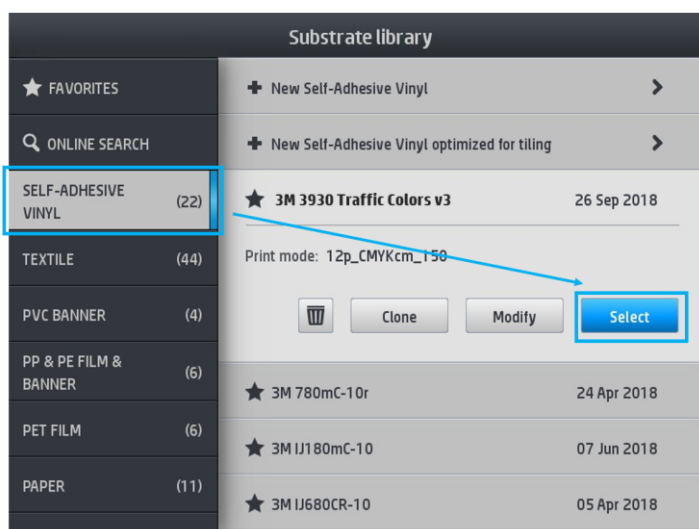


- It is recommended to use the **Take-up reel** when printing on reflective substrates.

- It is recommended to set “Skew Acceptance” to 1mm/m for dimensional accuracy.



- When asked, select the correct substrate preset from the substrate library menu. The substrate presets for 3M reflective signs will be found inside the “Self-Adhesive Vinyl” media folder.

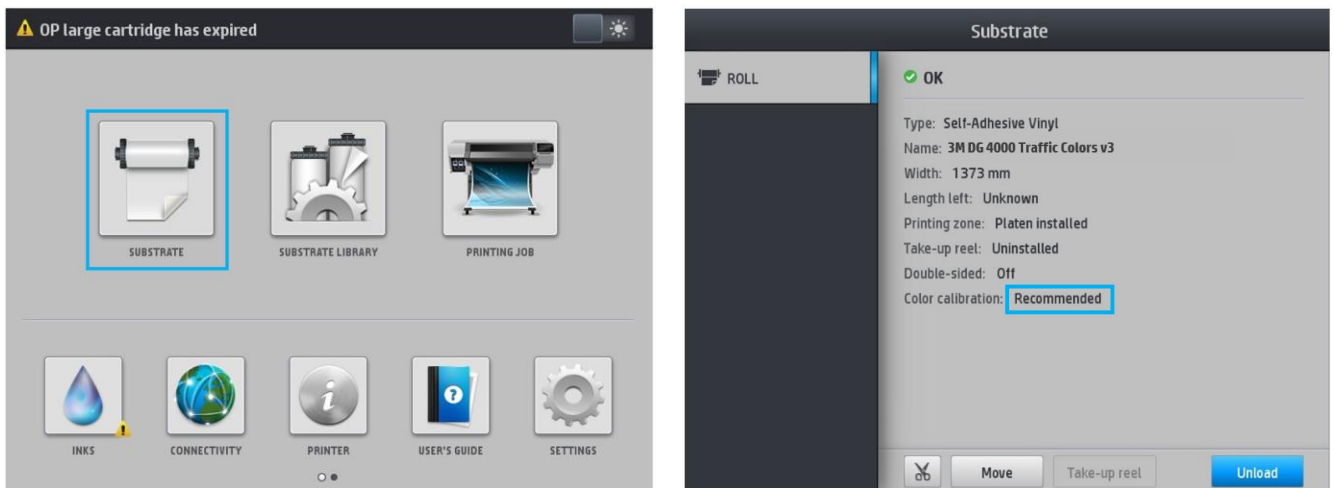


Color Calibration

This step is not necessary for Non-regulated nor Black-only signs.

Color calibration is essential to ensure that printed colors meet traffic regulations.

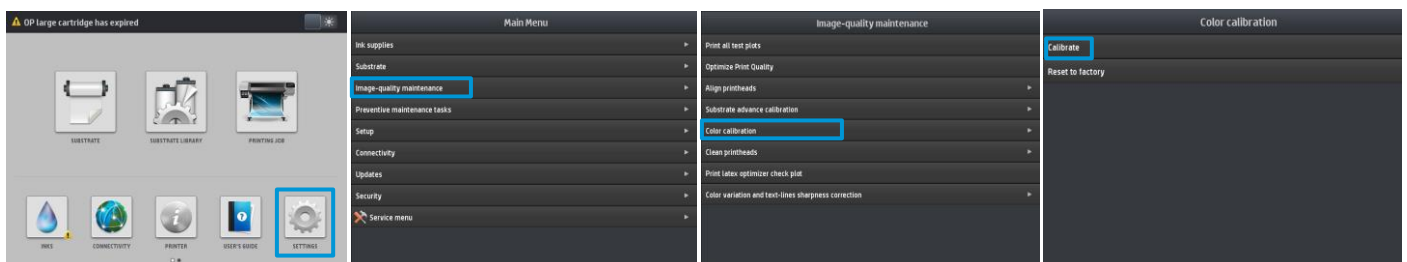
When Color Calibration is required, the front panel will show a message of **Obsolete** or **Recommended** on the **Substrate** menu, as shown in the following image:



As the printer's internal calibration cannot be used on reflective material, an alternative process needs to be used:

1. Load a roll of 3M IJ180 Self-adhesive Vinyl on the printer
2. On the Front Panel, select it as your reflective material (3M 4000 Traffic Colors or 3M 3930 Traffic Colors)
3. Click on:

Settings > Image Quality Maintenance > Color Calibration > Calibrate



4. Once the calibration process is finished, load the reflective material as specified in the previous chapter.

Important: Do not reset the color calibration.

If for any reason, the color calibration is “reset to factory”, delete that substrate profile. Begin again by downloading it and reinstalling it, as explained in previous chapters.

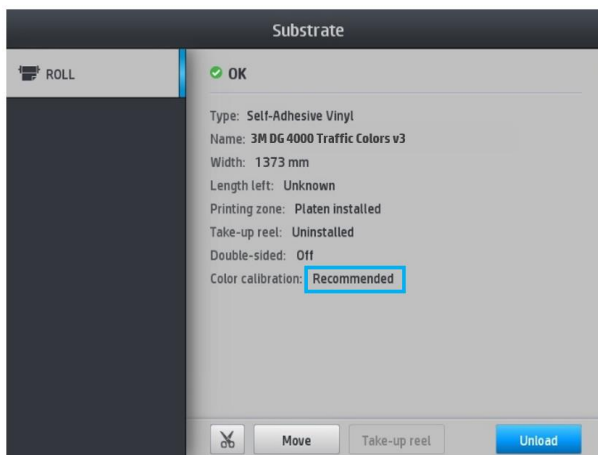
4 Printing Color Regulated Signs

This step is not necessary for Non-regulated nor Black-only signs.

These instructions reference the RIP: *SAi FlexiPRINT & Cut Authorized 3M™ Traffic Edition*.

First of all, verify the color calibration does not appear as **Obsolete** or **Recommended** on the *Substrate* menu.

If it is **Obsolete**, follow the instructions in the chapter **Color Calibration** in this document.



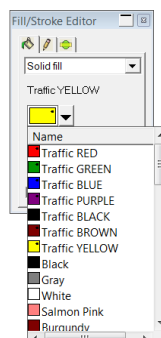
Important: In your image editor, define the colors on the image as **spot colors**. The following naming must be used for each color (Caution: the names are case-sensitive):

- Traffic **RED**
- Traffic **GREEN**
- Traffic **BLUE**
- Traffic **PURPLE**
- Traffic **BLACK**
- Traffic **BROWN**
- Traffic **YELLOW** *

(*) Traffic YELLOW color is not backed by 3M™ MCS™ Warranty for Traffic.


If the images are created using *SAi FlexiPRINT & Cut Authorized 3M™ Traffic Edition*, these colors will already be defined in the color palette.

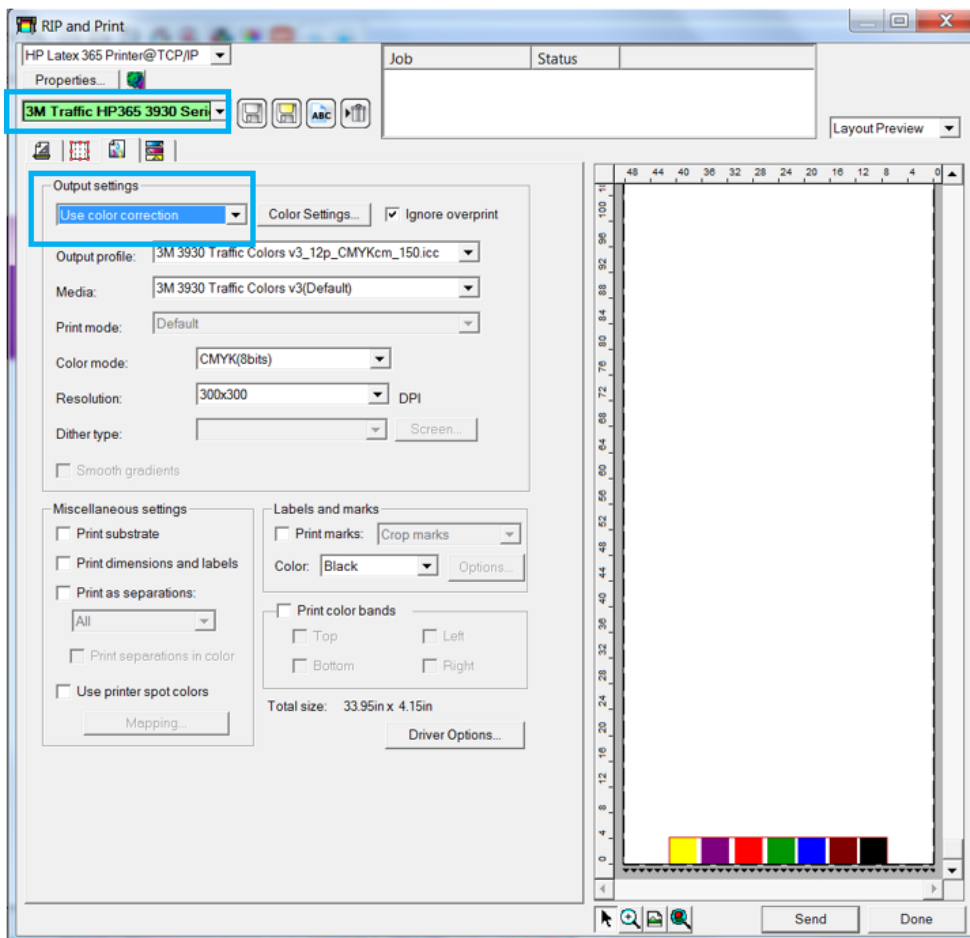
- The RIP will later translate these spot colors to the right CMYK values to comply with the ASTM D4956 – 09^{E1} norm.



- You may send the job to the RIP directly from *SAi FlexiPRINT & Cut Authorized 3M™ Traffic Edition*, by clicking on **RIP and Print**.



- Select the correct Preset and ensure “Use Color Correction” is enabled on the Color management tab.

- Then, click the **Send** button.

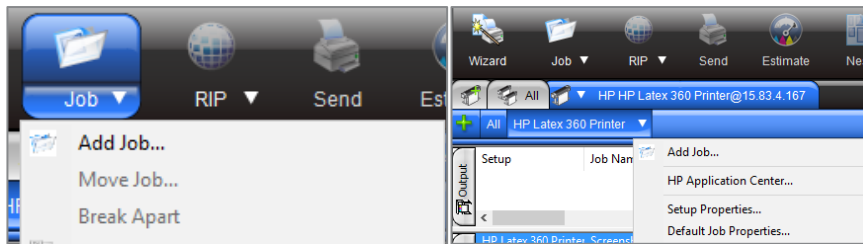



Find more information on using *SAi FlexiPRINT & Cut Authorized 3M™ Traffic Edition* to design signs at:

<http://flexihelp.saicloud.com/en/Content/Home.htm>

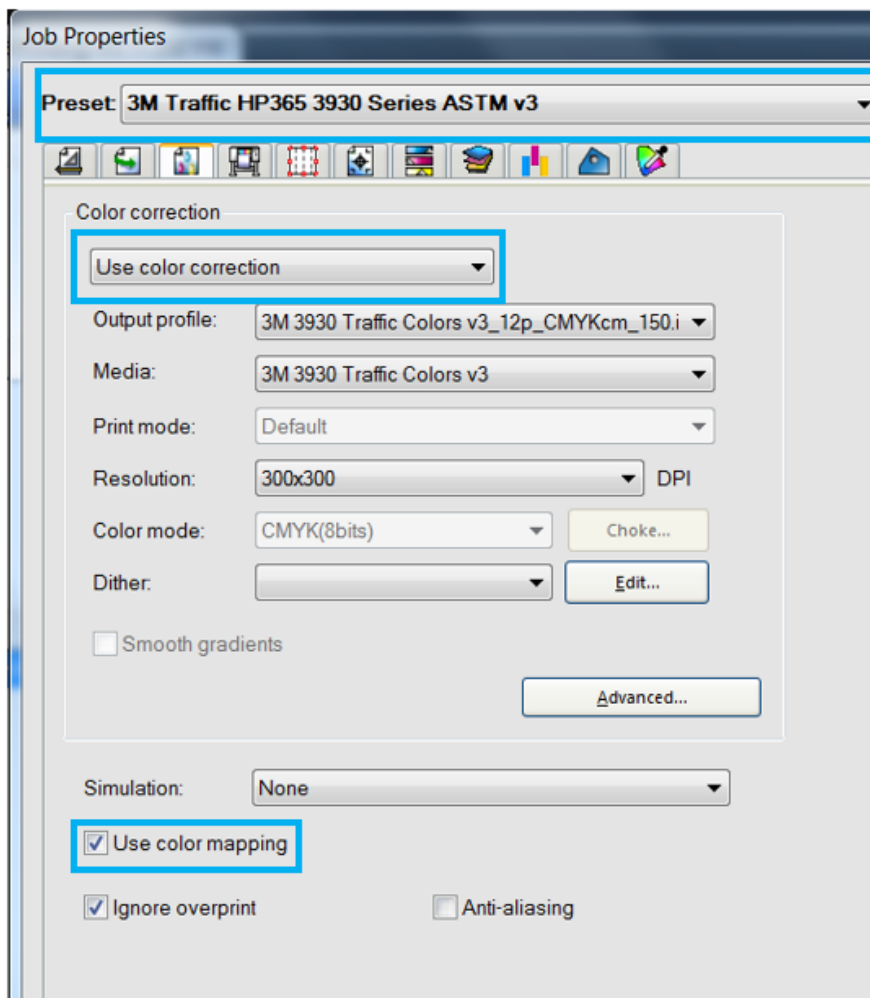
If a different job editor is used:

- Open **Production Manager** of *SAi FlexiPRINT & Cut Authorized 3M™ Traffic Edition*.
- Load the image at **Job > Add Job**, or click on your **printer's name** and then on **Add Job**.



- Open the **Job Properties**.
- Go to **Color Management** tab. 
- Select the **“Preset”** corresponding to your **substrate and printer**.

Important: Ensure **“Use color mapping”** is **enabled**. This will make sure the spot colors use the exact CMYK combinations. The design file must contain the correct spot color names.



Once all jobs are ready click on **Send** to start printing

5 Post processing

Protection

To achieve the maximum sign durability, it is recommended to laminate the prints with a matching over laminate. 3M ElectroCut™ Film Series 1170 has been specifically designed to protect 3M reflective substrates and has been tested on Latex 360/365 printed signs.

For more information on protection, refer to the 3M bulletins for each product:

- <http://multimedia.3m.com/mws/media/3499140/pb-4000-3m-diamond-grade-dq3-reflective-sheeting.pdf?fn=PB4000.pdf>
- <http://multimedia.3m.com/mws/media/2540310/high-intensity-grade-reflective-products.pdf>
- <http://multimedia.3m.com/mws/media/3466410/pb-3924s-3mtm-fl-orange-prismatic-work-zone-sheeting.pdf>

Application method

All sheets incorporate a pressure sensitive adhesive and should be applied using a **roll laminator**, either **mechanical** or **hand driven**.

Note: Hand application may show visual irregularities.

6 Troubleshooting and Tips & Tricks

Length Consistency: the print does not match the expected dimensions

There should not be significant size differences even when doing tiling jobs. If the size doesn't match the expected one or if it varies between jobs:

- Make sure the image size is correctly defined in your image editor.
- Make sure you are using the latest version of the Substrate Profiles available in the **Media solutions locator** (see Chapter 2 step 3). Uninstall and download the new profiles if necessary.
- Check that **OMAS** is disabled in the **Substrate Profile**.


In the **Substrate Library**, select your substrate.

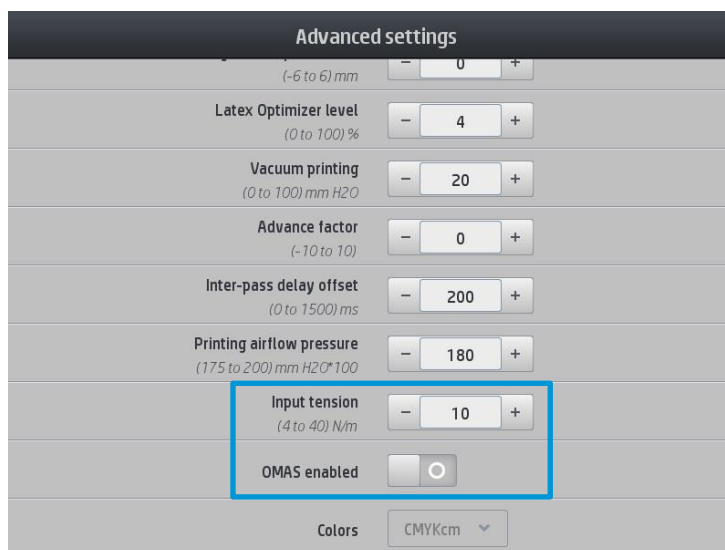
Click **Modify > Modify Print Mode**  > **Advanced Settings**. Check **OMAS enable** is disabled.

- Load the substrate with Maximum Skew of 1 mm/m.
- Cover the OMAS sensor with opaque tape.
- Use the Take-up-reel.

If size differences persist:

- Reduce Input tension.

In the **Substrate Library**, select your substrate. Click **Modify > Modify Print Mode**  > **Advanced Settings** and modify the **Input Tension** value (see following image).



Advanced settings	
	- 0 +
Latex Optimizer level (0 to 100) %	- 4 +
Vacuum printing (0 to 100) mm H ₂ O	- 20 +
Advance factor (-10 to 10)	- 0 +
Inter-pass delay offset (0 to 1500) ms	- 200 +
Printing airflow pressure (175 to 200) mm H ₂ O*100	- 180 +
Input tension (4 to 40) N/m	- 10 +
OMAS enabled	<input type="checkbox"/>
Colors	CMYKcm

Curing: If the printed image is not curing properly.

Samples should be completely cured inside the printer. If samples are not properly cured:

- **Slightly increase the curing temperature in 5 degrees** increments until the prints are completely cured.
Note: Increasing temperature may cause substrate deformations.
- **Increase inter-pass delay offset (ISD)** on printer's front panel by **200ms** increments. By increasing the ISD of the printer, the image will remain under the curing module for some additional time, but the throughput will slightly decrease.
- **Control the temperature and humidity conditions** in the printer's room. Ideally, the best conditions to print are close to **25°C / 77°F** and **50% RH**.
- **Move to a slower print mode.** Sixteen or Twenty-pass print modes generally offer better curing performance than twelve-pass print modes.

Rewetting: The image seems properly cured but after some time, an oily finish appears on the surface.

Rewetting is the result of an **improperly cured print**. Follow the same recommendations in the section above.

Head crashes: Damaged prints while printing.

Reflective substrates are very stiff and sensitive to heat. Conforming to the following recommendations will help prevent ruining the output while printing:

- Use the **recommended substrate presets** when possible.
- **Do not overheat** the substrate.
- Load the roll in the **second loading position**.
- Always **use edge holders** when printing reflective substrates.
- Use the **take-up reel** to print on reflective signs.

Note: Before printing, advance the substrate until it passes through the curing zone.

The printer cannot automatically cut reflective sheets.

Reflective vinyl, due to its special makeup, cannot be properly cut by the printer's automatic cutter.

7 Warranties

The products below, printed on the HP Latex 360, Latex 365 are covered by the 3M™ MCS™ Warranty on certain countries:

- 3M™ Diamond Grade™ DG Reflective Sheeting 4000 Series
- 3M™ High Intensity Prismatic Reflective Sheeting Series 3930

The warranty requires the samples to be laminated with an appropriate over laminate:

- 3M ElectroCut™ Film Series 1170
- 3M Premium Protective Overlay Series 1160i

Warranties vary by country. Contact your local 3M representative for details.

For more information on the warranty conditions visit the following web page:

3M.com/trafficsignprinting