

Cookbook How to print colored traffic signage on HP Latex 1500 printer



November 2020

Table of contents

Tab	ole of contents	2
1.	Overview	3
	Supported printers, media and RIP	3
	Application purpose	4
2.	Before Printing	5
	How to install media presets using the media locator	5
	How to install the SAi FlexiPRINT & CUT Authorized 3M Traffic Edition L1500 RIP	7
	Media presets for 3M reflective substrates	10
3.	Loading Media	11
	Color Calibration	15
4.	Printing Color Regulated Signs	17
5.	Post processing	20
	Protection	20
	Application method	20
6.	Warranties	21
7.	Troubleshooting and Tips & Tricks	22
	Length Consistency: the print does not match the expected dimensions	22
	Curing: If the printed image is not curing properly	23
	Rewetting: The image seems properly cured but after some time, an oily finish appears on the surface	23
	Head crashes: Damaged prints while printing	23

1. Overview

Supported printers, media and RIP

The recommendations in this document apply to the following printers:

• HP Latex 1500

The recommendations in this document apply to the following substrates:

- 3M[™] Diamond Grade [™] DG3 Reflective Sheeting Series 4000
- 3M[™] High Intensity Prismatic Reflective Sheeting Series 3930
- 3M Diamond Grade VIP Reflective Sheeting Series 3990
- 3M[™] Diamond Grade [™] Fluorescent LDP 3924s

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

• SAi FlexiPRINT & CUT Authorized 3M Traffic Edition L1500

Application purpose

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

Description	Examples
Long term regulated traffic signs using the following colors as per ASTM D4956 – 09 ^{E1} norm: Green Blue Brown Red Purple Black Yellow (3M DG 4000 substrate only) Printed on white media.	Image: Second state sta
Temporary and Permanent regulated traffic signs for work zones printed with black color only with a colored background. The background color comes from the color of the film being used.	ROAD CLOSED
Non-regulated reflective signs printed on color or with black color only.	RESERVED PARKING WIND NOPARKING BUS STOP Normal Creation Remain Common Common Common Cast A 555,0000 Remain Creation Remain Remain Remain Remain Remain Remain Remain Remain Remain Rema

This document **does not cover** printing the following types of signs:

Description	Examples	Recommended work-around
Long term regulated traffic signs using the following as per ASTM D4956 – 09 ^{E1} norm:		Cut the desired shape(s) from colored reflective vinyl and apply to the digitally printed sign.
• Orange	\checkmark	
Combined with other colors (aside from black)		

2. Before Printing

Download and install the media presets for the reflective substrate being used. Media 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 media presets using the media locator

To download and install media presets from the media locator to a Latex 1500 printer, follow these steps:

- 1. Open a web browser and visit the HP Media locator page: https://www.printos.com/ml/#/medialocator/latex
- 2. Search for the media preset, filtering by:
 - Printer: Latex 1500
 - Supplier: 3M Commercial Graphic
 - Application: Reflective signage
- 3. Locate the profiles designed for your media:
 - DG 4000
 - 3930
 - 3990
 - 3924 Black Only Images



4. Download the media presets from media locator:

~	Profiled Only DG 4	1000 Traffic Colors v3		
	3M Commercial Gr		Printer Models:	HP Latex 110, HP Latex 115, HP Latex 310
	G +1 300 - 704 - 0	500	Applications:	Outdoor banners , Reflective Signage
	Weight:		Type:	Self-Adhesive Vinyl
	Available widths:	61cm(24") 75cm(30") 91cm(36") 94cm(37") 101cm(40") 122cm(48")	Sub-type:	Reflective



- 5. Save the media preset (oms file) in a folder.
- 6. Install the media preset. The installation process is:

1. Enter the printer IP	2. Setup	3. Import and select media present
A - Catheres Revealers Catheres	Image: constraint of the constraint	Compared and a series of the series of
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 .	Select Import and, using the browse button, navigate to and select the media preset (an .oms file) that was previously downloaded from the media locator webpage.

How to install the SAi FlexiPRINT & CUT Authorized 3M Traffic Edition L1500 RIP

The SAi *FlexiPRINT & CUT Authorized 3M Traffic Edition L1500* comes with pre-installed presets for HP Latex printers, which include the right color formulations to match Traffic Signage standards on 3M sheeting.

Find below some general instructions to install and use this RIP. Check the following document for more detailed information:

https://hplatexknowledgecenter.com/blog/how-use-sai-flexi-print-cut-authorized-3m-traffic-edition-l1500-rip

1. Install the Software and connect to the printer

Locate the activation voucher provided by SAi. Create an account at <u>www.saicloud.com</u> and activate the license. You will access a webpage where you will be able to download and install the software. The first time Production Manager is launched, a setup window will ask to specify the correct printer folder and then request the printer IP address and permission to Read Media From The Printer.

Driver Options X						
Printer address: 10.20.30.40 Read Printer Media Table						
Media category:	PP PE Film Banner	\sim				
Media name:	Generic PP PE Synthetics	\sim				
Print Mode: 8p 6c 100%						
LZW compression						
Get optimal results for substrates						
ОК	Cancel Restore Defaults					

Find more detailed information at: <u>https://youtu.be/izQ5SxtuiR8</u> (for the HP Latex 1500, the activation code is not included with the printer, but should be provided by SAi or your HP dealer).

2. Create Duplicated Setups for each media

After adding the printer, make a setup for each approved 3M reflective sheeting:

a. Go to Default Job Properties.

All PLatex 1500@Folder					
Setup Jo	17	Add Job			
		HP Application Center			
<		Setup Properties	-		
		Default Job Properties			
	90	Delete Duplicate Setup			

b. Select the preset corresponding to your media and click *Apply* to make it default for this Setup.



c. Right click on the setup name and chose Setup Properties.

All THP HP Latex 1500@Folder					
All HP Latex 1500	<u> </u>				
Setup Jo	۲Ż	Add Job	Ī		
		HP Application Center			
		Setup Properties			
		Default Job Properties	1		
	1	Delete			
		Duplicate Setup			
1	~	Make Active			
		Color Profiler			

d. Change the Setup name to reflect the media preset from previous step and click OK.

tup Properties	×			
5				
Setup name: 3990 - HP L1500				
Hot folder: C:\Program Files (x86)\3M\FlexiPRIN Bro	<u>w</u> se			
Share name: Latex1500				
After receive: Hold ~				
Output time: 0:00:00				
Send in order by name	ded	🐔 🚭 AI	HP HP Late	ex 1500@Folder
		🕂 All 3990	0 - HP L1500 🔻	
		Setup Indino	Job Name	Status
Install desktop driver Reset				
Job Defaults Apply OK	Cancel			

e. For additional 3M Traffic Signage media: duplicate this Setup (Right click on setup name and choose *Duplicate Setup*), name it after the new media, and select the corresponding preset.

🐔 🖓 All 🐔 🔻 HP HP Latex 1500@Folder	
💠 All 3990 - HP L1500 🔻	Default Job Properties X
	Default Job Properties X Preset: 3M Traffic HP1500 4000 Series ASTM v Image: Contract of the series of
	Page range: Page nesting F Reset PDF Page Size OK Cancel Apply Latex 1500@Folder 4000 - HP L1500 e Status Sender

Media presets for 3M reflective substrates

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

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

Substrate	Media Profile Name	Information Signs (process colors)	Temporary Traffic Signs (Traffic BLACK only)*	Warning, Regulatory, and Guide Signs (Traffic colors)
3M 3924s	3M 3924 Black Only Images		\checkmark	
3M 3930 Series	3M 3930	✓	\checkmark	\checkmark
3M 3990 Series	3M 3990	\checkmark	✓	\checkmark
3M 4000 Series	3M 4000	√	✓	√

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

For Regulated Traffic signs, these are the supported regulated colors by media:

Substrate	Traffic BLACK	Traffic RED	Traffic GREEN	Traffic BLUE	Traffic BROWN	Traffic PURPLE	Traffic YELLOW
3M 3924s	\checkmark						
3M 3930 Series	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
3M 3990 Series	\checkmark	√	\checkmark	\checkmark	\checkmark	\checkmark	
3M 4000 Series	\checkmark	√	√	√	\checkmark	√	\checkmark

3. Loading Media

When loading <u>a single</u> 3M reflective roll, Follow these recommendations:

• Center the roll on the spindle.



To reduce media use, you may use the substrate saver. Check this video for instructions on using the Substrate Saver: www.hp.com/go/latex1500/substrateloading



• Due to the stiffness of the substrate, it is mandatory to **use edge holders** to print on reflective substrates.



- Select the correct media preset from the substrate library menu. The media presets for 3M reflective signs will be found inside the "Self-Adhesive Vinyl" media folder.
- Set the **Carriage beam position to 0.30cm** or higher to prevent the carriage from touching the media



Substrate settin	igs				
Loaded substra Change to:	te: 3924				
Category:	Self-Adhesive V				~
Substrate:	3924				~
Remaining sub:	strate:				
	cm				
Position					
Number of ro Please provid					
		ę	+	62.00	
	e units in cm		+	62.00	
Please provid	e units in cm	123.00	+	<u>62.00</u>	

When loading two 3M reflective rolls, Follow these recommendations:

• Follow the loading process for dual rolls. See the process on the following video (same as on the latex 3X00 series): <u>https://www.youtube.com/watch?v=QBnxYH16Rd4</u>

To reduce media use, use the substrate saver. Check this video for instructions on using the Substrate Saver: www.hp.com/go/latex1500/substrateloading



• Due to the stiffness of the substrate, it is mandatory to **use edge holders** to print on reflective substrates.



- Select the correct media preset from the substrate library menu. The media presets for 3M reflective signs will be found inside the "Self-Adhesive Vinyl" media folder.
- Set the **Carriage beam position to 0.30cm** or higher to prevent the carriage from touching the media

Carriage beam pos.:	Substrate settings
Custom ~	Loaded substrate: 3924 Changeto:
0.30 cm Apply	Category: Self.Adhesive V
	Remaining substrate.
	Position Number of rolls: 17 ====
	IF 크] Please provide units in cm
	-61.00 ± (62.00 ±)
3M 3930 Traffic Colors v3	
# Left: Right: Width 1 20.00 144.00 124.0 2 -143.00 -19.00 124.0	

• **Do not load different substrates** as media settings have been developed for each specific substrate.



• We recommend using same roll widths.



Color Calibration

This step is not necessary for Non-regulated or Black-only signs.

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

Perform **Color Calibration** the first time you load a new substrate or whenever you notice excessive color differences between prints. Such color differences are normally caused by aging and wear of the printheads, or when installing new printheads.

You can check the color calibration status of your substrates with the Internal Print Server: select **Substrate > Color calibration > Show all**.

If the status is **Obsolete** for your specific Reflective substrate, we recommend performing a color calibration.

Loaded substrate: Vinyl-Calendered-100%	Calibrate Reset		
Calibration status: 🚫 Done			
	Hide All		
Substrate	Status		
PVC Scrim banner backlit-250% (Banners)	Default		
Green banner-100% (Banners)	Done		
B Green banner-150% (Banners)	Default		
Green banner-250% (Banners)	Default		
1 HP Durable Frontlit Scrim Banner (Banners)	Default		
1 HP Outdoor Frontlit Scrim Banner (Banners)	Default		
1 HP Backlit Scrim Banner (Banners)	Default		
HP HDPE Reinforced Banner (Banners)	Default		
Vinyl-Calendered-100% (Self adhesive)	Done		
Vinyl-Calendered-150% (Self adhesive)	Default		
 Vinyl-Calendered-250% (Self adhesive) 	Default		

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, but select the Reflective substrate you want to calibrate.
- 2. To start color calibration from the Internal Print Server, select **Substrate** > **Color calibration**, then click the **Calibrate button**:



- 3. The calibration process is fully automatic and can be performed unattended after you have loaded the substrate you wish to calibrate. The process takes about 15 minutes.
- 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 media profile**. Begin again by downloading 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 L1500.

First of all, verify the color calibration does not appear as **Obsolete** at:

Substrate > Color calibration > Show all.

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

Loaded substrate: Vinyl-Calendered-100%	Calibrate Reset		
Calibration status: 📀 Done			
	Hide All		
Substrate	Status	ŀ	
PVC Scrim banner backlit-250% (Banners)	Default		
Green banner-100% (Banners)	Done		
Green banner-150% (Banners)	Default		
Green banner-250% (Banners)	Default		
1 HP Durable Frontlit Scrim Banner (Banners)	Default		
HP Outdoor Frontlit Scrim Banner (Banners)	Default	Ľ	
1 HP Backlit Scrim Banner (Banners)	Default		
1 HP HDPE Reinforced Banner (Banners)	Default		
Vinyl-Calendered-100% (Self adhesive)	Done		
1 Vinyl-Calendered-150% (Self adhesive)	Default		
Vinyl-Calendered-250% (Self adhesive)	Default		

Important: In your image editor, define the colors on the image as **spot colors**. The following naming must be used for each color:

- Traffic **RED**
- Traffic **GREEN**
- Traffic **BLUE**
- Traffic **PURPLE**

- Traffic **BLACK**
- Traffic BROWN
- Traffic YELLOW

Caution: the spot color names are case-sensitive.

If the images are created using *SAi FlexiPRINT* & *CUT Authorized 3M Traffic Edition L1500*, these colors will already be defined in the color palette.

• The RIP will translate these colors to 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 L1500*, by clicking on *RIP and Print*.



• When sending a job from the Rip and Print window, select the correct Setup name from the drop down menu. Correct preset, media profile, and color formulas will be applied automatically.



• If adding a job directly to Production Manager, just add the job to the correct Setup and all correct settings will be applied.

🚳 Add Job: 3990) - HP L1500				×
Look in Quick access Desktop Libraries This PC	Signs		~) 🗊 🖻 🛄 T	Add Cancel STOPP Preview Copy to job folder Open job properties Nest jobs
Network	File name: Files of type:	STOP sign.jpg All Readable		~	
	Setup: Preset:	3990 - HP L1500 3990 - HP L1500 4000 - HP L1500			



• Once all jobs are ready, click *Send* to start printing.

• At the Printer, make sure you use the correct print-mode and settings as shown below:

Edit substrate					
Loaded substrat	te: No substrate l	oaded			
Change to:					
Category:	Self-Adhesive Vinyl			~	
Substrate:	3M 3990 Traffic Colors	v3		~	
🗷 Named only	r.	All	~	All ~	All ~
Name:		Passes:	Colors:	Ink Density:	Mask Type:
12p 6c 170%		12	CMYKcm	170	Large mask
Substrate prop	perties				
Input tension:	70 📫	N/m		Vacuum:	35 🛨 mmH2O
Output tensio	n: 60 🛨	N/m		😗 🗆 Sys	stem Preheat
Job gap control	s for sensitive substrate	5			
😗 🗆 Job ç	gap (35.00 cm)				
🛈 🗆 Start	of queue gap (120.	00 cm)			
					Update substrate
Substrate properti	es for the print mode				
Quinter		L C		Drying air press	ure: 30 🛨 Pa
Curing temp				Drying temperat	ure: 55 🛨 C
Curing airfle	ow: 85 🛨	%			
HP Latex O	ptimizer: 12 ÷	1 oz.		_	
THE Latex O	punnizer. 12 🖸	1 10			Update print mode
					Close

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:

- <u>http://multimedia.3m.com/mws/media/3499140/pb-4000-3m-diamond-grade-dq3-reflective-sheeting.pdf?fn=PB4000.pdf</u>
- http://multimedia.3m.com/mws/media/2540310/high-intensity-grade-reflective-products.pdf
- <u>http://multimedia.3m.com/mws/media/3466410/pb-3924s-3mtm-fl-orange-prismatic-work-zone-sheeting.pdf</u>
- Bulletin 3990?

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. Warranties

The products below, printed on the HP Latex 1500, are covered by the 3M warranty in certain countries:

- 3M[™] Diamond Grade [™] DG3 Reflective Sheeting Series 4000
- 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).

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

For more information on the warranty conditions, visit: <u>3M.com/trafficsignprinting</u>

7. 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 Media Profiles available in the **Media solutions locator** (see Chapter 2, Step 3). Uninstall and download the new profiles if necessary.

Print mode: 12p 6c 170%				
Substrate Advance				
OMAS Enabled	Auto		$\mathbf{\overline{\mathbf{A}}}$	
Drying and Curing		Too short	Too long	Correct
Curing temp: 65	c	a tipe of	FAT	
		See.	HA	
		Too cold	Too hot	Correct
Substrate Forces				
Vacuum 15 mmH20	Input Tension 70 Nin	n Output Tension i	50 Nim	4

• Check that **OMAS is disabled** at **Printer > Printing adjustments**.

If size differences persist:

• Reduce Tension Settings at Substrate > Edit.

hange to:									
Category:	Paper	•							
Substrate:	HP Everyday Sat	in Pho	to Paper			•			
Named only:				Ali	All	• All	•		
Name:		P	asses:	Colors:	Ink Density:	Mask Type:			
6p 6c 100ink		6		CMYKcm	100	Large mask			
		6		CMYKcm	100	Uniformity			-
		6		CMYKcm	110	Large mask			
		6		CMYKcm	110	Uniformity			
		6		CMYKcm	120	Large mask			
Substrate propertie	15	6		CMYKcm	120	Uniformity			-
			_					mmH	20
Input tension:	60	- 141	N/m		Vacu	Jum:	15 🚔		
Input tension: Output tension		\$ \$	N/m N/m			System Preheat	15 😜	mme	
	n: 50	\$	N/m				15 😜	mm	
Output tension Jobgap controls	n: 50	i tales	N/m				15 文		
Output tension Jobgap controls	n: 50 for sensitive sub ap (35.00 cm)	i tales	N/m			System Preheat	Update s		le
Output tension Jobgap controls I V Job ga I V Start o	n: 50 for sensitive sub ap (35.00 cm) of queue gap (states	N/m			System Preheat			le:
Output tension Jobgap controls I V Job ga I V Start o	n: 50 for sensitive sub ap (35.00 cm) of queue gap (e states 120.0	N/m 10 cm) C		0	System Preheat	Update s		
Output tension Job gap controls I V Job ga I V Job ga I V Start o Substrate propertie	n: 50 a for sensitive sut ap (35.00 cm) of queue gap (es for the print mo	e 120.0 de	N/m 10 cm) C		0	System Preheat	Update s	ubstro কি	Pa

Curing: If the printed image is not curing properly

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

- 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.
- Slightly increase the curing temperature by 5 degree increments until the prints are completely cured at Substrate > Edit.

Note: Increasing temperature may cause media deformations.

• Move to a slower print mode. Keep the same ink Density.

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 previous section.

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 media presets** when possible.
- Always **use edge holders** when printing reflective substrates.
- Set the Carriage beam position to 0.30cm or higher.
- Load the roll without the Substrate Saver.

