# Cookbook HP Latex Print and Cut Solution





# Table of contents

Tab	ole of co	ntents	2
1.	Overv	iew	4
	1.1	Who can benefit from reading this document?	4
2.	The H	P Latex Print and Cut Solution	5
	2.1	HP Latex Print and Cut portfolio	5
	2.2	Multiple applications for print and cut	5
3.	How t	o get the best results from the HP Latex Print and Cut Solution	6
	3.1	Workflow	6
	3.2	Job creation	6
	3.2.1	HP Applications Center overview	6
	3.2.2	Benefits of HP Applications Center	7
	3.2.3	Example	7
	3.2.4	How to create an HP Applications Center account	8
	3.3	Job edition and management – RIP	8
	3.3.1	Job workflows	8
	3.3.2	Adding contour marks	9
	3.3.3	HP barcode	9
	3.3.4	Job alignment	10
	3.3.5	Printing parameters	11
	3.3.6	Cutting parameters	14
	3.4	Print	16
	3.4.1	Printer setup	16
	3.4.2	Send job	16
	3.5	Cutting	17
	3.5.1	Loading the substrate	17
	3.5.2	Cutting tool	17
	3.5.3	User configurations	18
	3.5.4	Calibrations	18
	3.5.5	Finding the correct cutting settings for your material	20
	3.6	Cutting presets	22
4.	Tips fo	23	
	4.1	Get the right cutting accuracy	23
	4.2	Self-adhesive vinyls	25
	4.3	Transfer media	25
	4.4	Transparent / translucent films	26

	4.5	Laminates	26
	4.6	Perforated SAV	26
	4.7	Self-adhesive textiles	29
	4.8	Reflective graphic films	29
5.	Useful	links	31

# 1. Overview

# 1.1 Who can benefit from reading this document?

This document is intended for:

• Owners and operators of the HP Latex 115 Print and Cut Solution, the HP Latex 315 Print and Cut Solution, and the HP Latex 335 Print and Cut Solution.

This document provides information about:

- The main features and possibilities of the HP Latex Print and Cut Solution.
- The HP Latex Print and Cut workflow.
- How to get the best results for a wide range of applications and materials.

# 2. The HP Latex Print and Cut Solution

# 2.1 HP Latex Print and Cut portfolio







		HP Latex 115 Print and Cut Solution	HP Latex 315 Print and Cut Solution	HP Latex 335 Print and Cut Solution	
nter	Max. media width	137.1 cm (54 inch)		162.5 cm (64 inch)	
HP Latex printer	Max. loading	25 kg (	42 kg (92.6 lb.)		
물	HP Latex Inks	HP 821 Latex lnk 400 mL cartridges	HP 831 Latex lnk 775 mL cartridges		
HP Latex cutter	Cut width	135 cm ( <u>5</u>	53.1 inch)	158 cm (62.2 inch)	

# 2.2 Multiple applications for print and cut



Labels & stickers



Custom clothing



Floor graphics



Wall decals



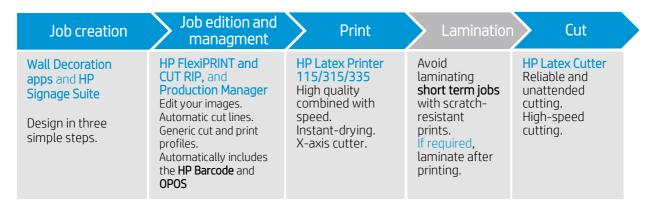
Window graphics



Vehicle graphics

# 3. How to get the best results from the HP Latex Print and Cut Solution

#### 3.1 Workflow



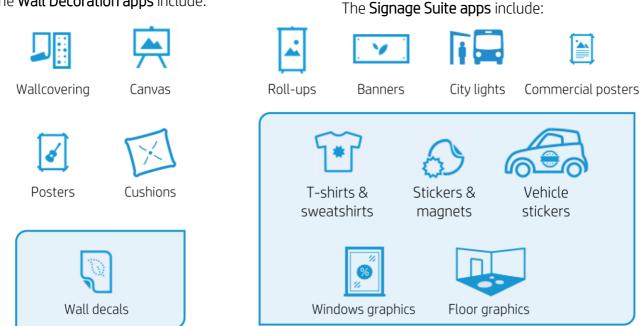
#### 3.2 Job creation

#### 3.2.1 HP Applications Center overview

HP Applications Center is a **cloud-based resource** used for custom wall decoration and signage applications, as well as for residential, retail or commercial purposes. Further information can be found at: https://www.hpapplicationscenter.com/

It includes a number of different applications, which are listed below:





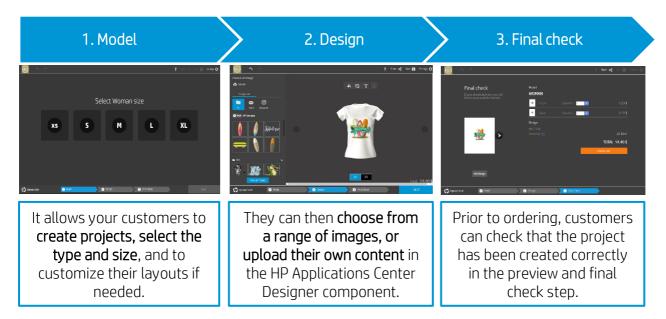
Applications in the blue shaded areas use Print and Cut

#### 3.2.2 Benefits of HP Applications Center

These are some of the **outstanding features** offered by HP Applications Center:

- A friendly three-step design tool designed for **non-expert users**.
- **3D visualization** for applications that require it.
- Access to content libraries.
- Predefined templates.
- **Easy management** of production, customers, and content.
- Automatic **ready-to-print PDF** generation, which saves time and reduces errors.
- Automatic job download with JDF support and PDF file versioning control.
- **Easy integration** with PSP websites: External hyperlinks, CRM plug-ins based on pre-defined templates or API website integration.
- Print and Cut technology used by several of the available apps.

#### 3.2.3 Example



As a PSP, you can access a dashboard containing the orders received and download them as **ready-to-print PDF** files. It creates a personalized experience with an integrated end-to-end process including **e-commerce capabilities**.

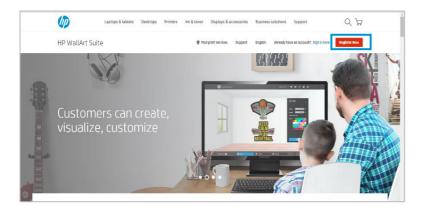
Remember, there are two alternative ways to integrate with your website:

- Either by using the plugin, or
- with the API itself.

#### 3.2.4 How to create an HP Applications Center account

You can create an HP Applications Center account on the website: <a href="www.hpapplicationscenter.com">www.hpapplicationscenter.com</a>

All you need to do is **register your HP Latex printer** with this **free application**, entering the printer's serial number during the registration process.





You can also access your HP Applications Center account from your connected **PrintOS account**.

## 3.3 Job edition and management – RIP

Jobs can be created with HP Signage Suite, HP FlexiPRINT and CUT, or with any other graphic design software.

The following sections briefly explain the steps to follow for preparing your job with the HP FlexiPRINT and CUT **RIP**, and how to get ready to print and cut.

#### 3.3.1 Job workflows

There are three main workflows:

- 1. Files with contour marks Direct to Production Manager HP Edition.
- 2. Files without contour marks Edit with HP FlexiPRINT and CUT Editor.
- 3. **Direct cutting** Edit with HP FlexiPRINT and CUT Editor.

#### 3.3.2 Adding contour marks

**HP FlexiPRINT and Cut Editor** allows you to select the paths in your image file and to add the contour marks:

Add contour lines > Effects menu > Contour cut.

Some image types may require further steps:

Vectors / masks	Bitmaps / color traces	Direct cut
Remove any unnecessary background, and select only the	For bitmaps, make the background transparent.	In this case, no contour lines are needed.
outline paths that you want to add a contour line to.	The <b>Color Trace</b> option helps to create a higher-quality contour cut.	Create your design and cut/plot.

You can find further details in the HP FlexiPRINT and CUT Editor tutorial at: Help menu > Flexi Tutorial.

#### 3.3.3 HP barcode

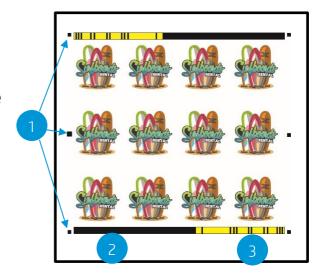
Contour cutting is made possible by the highly accurate **Optical Positioning System (OPOS)**.

The **OPOS** sensor is mounted underneath the tool carriage and detects the various registration marks printed on the substrate.

The **HP barcode** is the group of elements, printed on the substrate to be cut, that allow the cutter's OPOS sensor to identify what cuts are required and where these should be made.

It consists of three items:

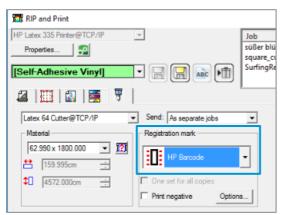
- 1. **Registration marks**: Small squares that help the cutter to locate the job accurately, and to compensate for skew and deformation.
- 2. An **OPOS XY** line: A line at the beginning of the job that helps the cutter to compensate for deformation across the width of the job (bow deformation).
- 3. Blinking lines (yellow): A code that can be placed at both ends of the job, improving productivity, as you can feed in the substrate starting at either end.



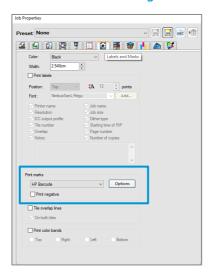
The HP barcode is added by default, but can be deactivated to allow selection of another type of registration mark: **OPOS** or **OPOS** XY. These marks do not allow for **unattended** cutting tasks.

- OPOS only registration marks are printed.
- OPOS XY registration marks and a horizontal line are printed for deformation correction.

**HP FlexiPRINT** 



#### **Production Manager**

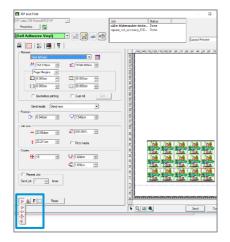


#### 3.3.4 Job alignment

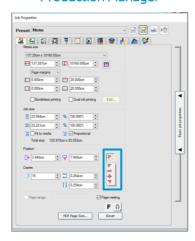
By default, jobs are aligned on the **right-hand side of the substrate**.

It is important to use the **same alignment for all the jobs** you wish to print and cut together on the same substrate. This will ensure that the sensor can read the HP barcodes of consecutive jobs.

**HP FlexiPRINT** 



**Production Manager** 



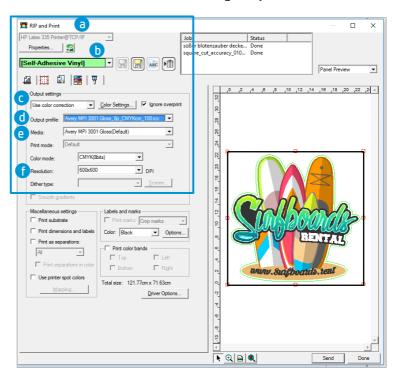
#### 3.3.5 Printing parameters

In order to get the best results from your substrate, printer, and cutter, set up your printer options as follows. Please note that the words **substrate** and **media** are used interchangeably.

#### Set the substrate presets

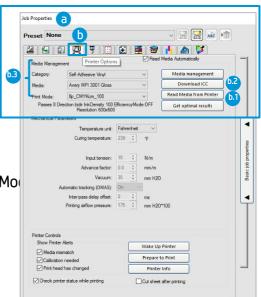
#### Option 1. Using HP FlexiPRINT and CUT Editor

- a. Go to RIP and Print.
- b. Go to the **Advanced Options** menu.
- c. Choose Use color correction.
- d. Select the correct **Output profile**.
- e. Select the **Media** you have loaded in the printer.
- f. Select the highest resolution: **600x600 dpi.**

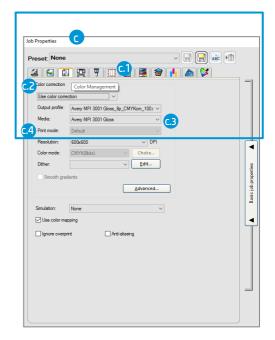


#### Option 2. Using Production Manager HP Edition

- a. Select your job, and go to **Job Properties**.
- b. In the **Printer Options** menu:
  - b.1.Click on **Read media from printer**.
  - b.2.Click Download ICC.
  - b.3.Choose the correct **Category**, **Media**, and **Print Mo**



- c. Finally, in the Color Management menu:
  - c.1. Choose Use color correction.
  - c.2. Select the correct **Output profile.**
  - c.3. Select the **Media** you have loaded in the printer.
  - c.4. Select the highest resolution: **600x600 dpi**.



#### How to install your substrate presets

If you are using a material which is Certified for HP Latex inks, you can use its substrate presets. You can either install them from the **printer's front panel** or download them from the **PrintOS Media** Locator. You can also create your **own specific substrate presets**.

Option 1. Install from the printer's front panel

a. Click on the **Search Online** button.



b. Then, filter by **Brand, Type, Subtype** and **Application**; select the substrate from the drop-down list.



- c. Once you have located the substrate preset of your choice, click on its **download icon**. This will queue it for automatic download and installation, which is done in the background.
- d. Supported RIP software will synchronize its substrate preset list with the printer. This ensures that the printer and the RIP will always have the same list.

#### Option 2. Download your substrate preset from the PrintOS Media Locator

a. All the substrate presets are available from the HP Media Solutions Locator, which is an application within PrintOS: <a href="https://www.printos.com/ml/#/medialocator">https://www.printos.com/ml/#/medialocator</a>

#### Create your own substrate preset

- Finally, if you cannot find a ready-made preset for your substrate, and if you prefer not to use a generic preset or edit an existing one, you can make your own preset from scratch.
- The **Add New Substrate** wizard in the printer's front panel will help you to establish the best settings for your substrate.
- Full instructions can be found in the printer's **User Guide**.

## 3.3.6 Cutting parameters

Define the **type of cut** and the **cutting parameters** for each contour mark that your job includes, according to the substrate material you are using.

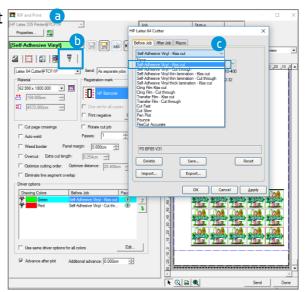
As a starting point, you can select the cutting presets that are already stored in your HP FlexiPRINT and CUT Editor and Production Manager HP Edition.

Section 3.5.5 explains how to find the correct cutting settings for your substrate.

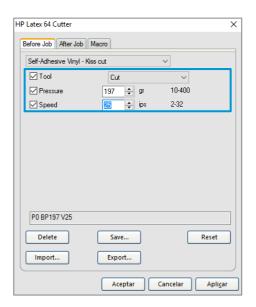
#### Setting the cutting parameters

#### Option 1. Using HP FlexiPRINT and CUT Editor

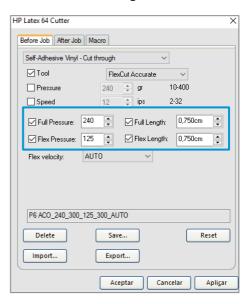
- a. Go to RIP and Print.
- b. In the **Contour** menu, you can set specific cutting parameters for each contour mark.
- c. Choose a cutting preset with default cutting parameters.



#### Kiss cut parameters



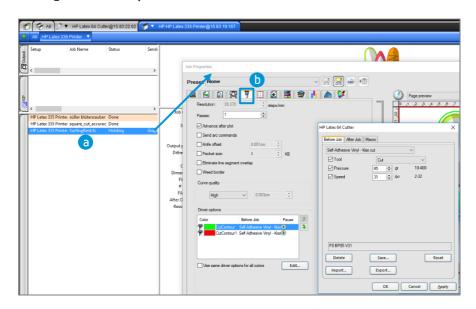
#### Cut-through (FlexCut)



- d. You can also modify your cutting parameters according to the results obtained in the tests described in section 3.5.5. Remember to save the new preset with a different name.
- e. To use the cutting settings previously stored in the cutter's **user configuration**, uncheck the cutting parameter check boxes.

#### Option 2. Using Production Manager HP Edition

- a. Select your job from the printer or cutter queue.
- b. Then go to **Job Properties > Cut menu**.



Then follow the steps described above in HP FlexiPRINT and CUT Editor.

#### 3.4 Print

#### 3.4.1 Printer setup

Please consider using HP Latex Certified substrates in order to get the best printing performance.

Make sure that the substrate type that you select on the front panel and in your RIP software is the same as the substrate type that is loaded in the printer.

Make sure that the substrate has been calibrated:

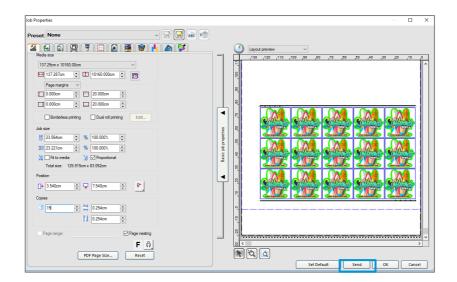
- Substrate-advance calibration (if needed)
- Printhead alignment
- Color calibration

Please refer to the printer's **User Guide** for an in-depth explanation on **How to handle the substrate** and **Substrate settings**.

**Important:** Some materials may deform when they have been loaded in the printer for several hours and not printed on. In order to prevent possible printhead crashes during loading, advance the substrate until the deformed area has passed the printing zone.

#### 3.4.2 Send job

After editing and preparing your job, you can send it to be printed either from the HP FlexiPRINT and CUT Editor or from the Production Manager HP Edition.

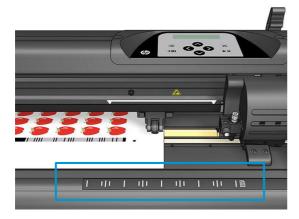


## 3.5 Cutting

After the job is printed, you can load the substrate directly onto the cutter.

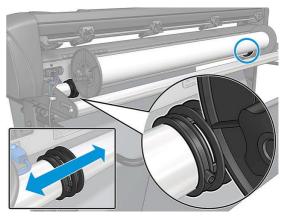
#### 3.5.1 Loading the substrate

#### Sheet format



- Load from the front or the rear.
- Use the "ruler" alignment marks.

Rolls



- Load from the rear.
- Use media flanges for better media advance.

When using the HP barcodes, there is no need to resend the job from your computer to the cutter. It will retrieve the cutting info from the RIP as long as you keep it in the job queue. In addition, you do not need to worry about job orientation when loading it on the cutter.

When **not using HP barcodes**, you must send the job to the cutter directly from the **Production Manager HP Edition**; in this case, load the job on the cutter so that the first OPOS mark to be read is the one closest to the lead printing edge of the plot.

#### 3.5.2 Cutting tool

#### Type of knife

HP recommends using the correct knife for each type of substrate.

Please follow the indications below, based on the substrate thickness:



#### Knife depth

Knife depth must be increased when using thicker types of vinyl and decreased when using thinner types of vinyl. In any case, only the knife tip should stick out beyond the knife holder, as shown in the following picture.





#### 3.5.3 User configurations

There are four user configurations for **cutter parameters**. The parameters can be set to different values for each user, enabling you to reconfigure the cutter for a different type of job or substrate quickly and easily by selecting a different user.

• Change user: Menu > User.

An asterisk appears by the name of the currently selected user.

#### 3.5.4 Calibrations

The **OPOS** sensor has been calibrated at the factory, but HP recommends doing a test to determine how well the factory-set parameters work with the material you are using. If the accuracy obtained is not satisfactory, then you should perform an OPOS calibration.

From the cutter's front panel, select: **Menu > System setup > Calibrations**.

#### **OPOS** calibration

Cal. OPOS: Calibrates the distance between the knife and the sensor.

Perform this calibration whenever you install a new knife.

#### Substrate calibration

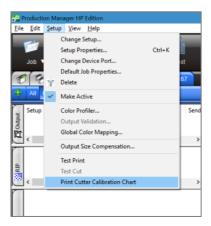
Cal. Media: Calibrates the reflection levels of the marker color and the substrate color.

Perform this calibration when using colored, translucent, high-gloss, or reflective substrates.

**Important:** Prior to performing the calibration with the cutter, a set of calibration patches need to be printed on the **same material as the cutting job**, as described in the following steps:

- 1. Load the material on the printer.
- 2. Go to **Production Manager HP Edition**.

3. Go to the Menu bar and select: **Setup > Print Cutter Calibration Chart.** 



4. The job will print automatically.



- 5. Load the printed chart in the cutter.
- 6. From the cutter's front panel, select: Menu > System setup > Calibrations > Cal. Media.
- 7. Follow the front panel instructions; you will be asked to position the OPOS sensor above each color patch, including the non-printed one.



#### Length calibration

**Cal. Length**: Allows the length of the cut lines to be adjusted within specifications.

Perform this calibration when using multiple vinyls that require match-up between them.

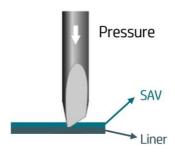
#### 3.5.5 Finding the correct cutting settings for your material

The cutting presets are given for a limited number of media categories that may not include your specific substrate. The amount of wear on the knife can also affect the cutting result.

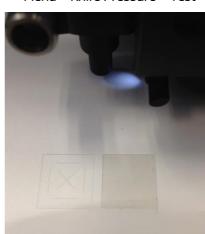
For these reasons, **HP strongly recommends that you ensure the cutting settings are correct** before sending a print-and-cut job.

#### For Kiss cuts (contour cuts)

• The knife cuts completely through the vinyl and slightly into the liner.



• Check the current knife pressure from the cutter's front panel.



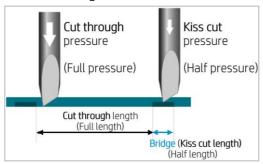
Menu > Knife Pressure > Test

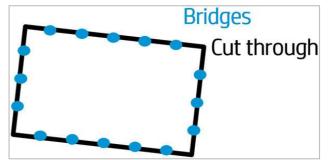
The knife pressure is set correctly when the test pattern cuts completely through the vinyl, the vinyl is removed, and the blade tip has visibly scratched the front side of the substrate backing (liner). The blade should never cut through the backing.

- If the result is **not OK**, increase or decrease the knife pressure value and test again.
- The settings can be stored in the current **user's** configuration.

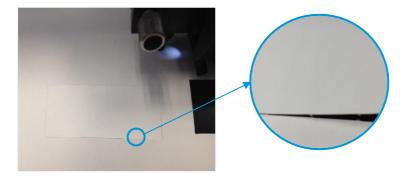
#### For Cut-throughs (FlexCut)

• The knife cuts completely through the substrate at some points, and just through the vinyl at others (bridges).





• Check current FlexCut performance from the cutter's front panel: **Menu > FlexCut > Test.**The setting is correct when the substrate is completely cut-through but the test pattern stays together, so it can later be torn out.



• Adjust the FlexCut settings and test.



• The settings can be stored in the current user's configuration.

**Note:** The FlexCut option is only reliable with simple shapes like **circles, rectangles,** and **ovals**.

# 3.6 Cutting presets

The following settings correspond to the **generic presets** provided in the HP FlexiPRINT and CUT software.

Use these values as a starting point for adjusting the cutting parameters to your specific material.

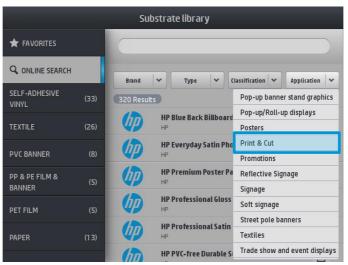
	Kiss cut	Cut-through	
Material	Pressure (g)	Full pressure (g)	Half pressure (g)
Self-adhesive vinyl	85	240	125
Self-adhesive vinyl, thin lamination	170	265	200
Self-adhesive vinyl, thick lamination	225	N/A	N/A
Cling film (PET)	210	380	230
Transfer film (PP)	135	175	155

Note: These presets are set for the **standard** knife type.

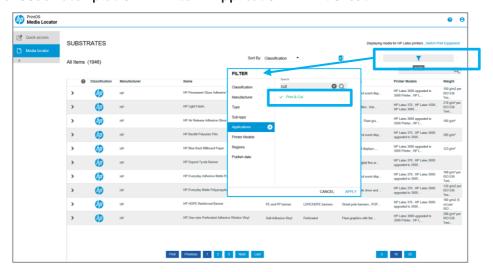
# 4. Tips for materials

## 4.1 Get the right cutting accuracy

- Download media presets recommended for Print&Cut:
  - On the printer's Front Panel, select:
    Substrate library > Online Search > Filter by Application > Print & Cut.



2. PrintOS Media Locator: <a href="https://www.printos.com/ml/#/medialocator">https://www.printos.com/ml/#/medialocator</a> Choose Latex platform > Filter > Application > Print & Cut.



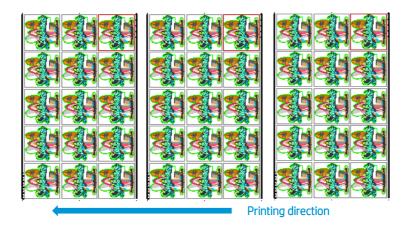
For **self-adhesive vinyls**, please also follow the tips mentioned in section 4.2.

- If possible, always use the OPOS mark HP barcode.
- **Set OPOS panels** ON, from the cutter's front panel:

Menu > System setup > Configuration > OPOS parameters > Panels.

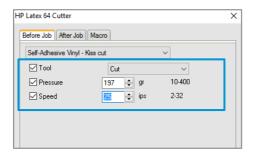
When ON, this option allows the markers to be read in panels; the OPOS sensor reads markers according to panel size, instead of loading them all. When set to ON, the sensor will load only two markers in the X direction when loading OPOS. Other markers will be read when unrolling the substrate.

- **Reduce job sizes**, e.g. fewer rows of images, and printing several copies of a job; in this manner, more **horizontal bars** will be printed and the OPOS sensor will be able to readjust the alignment.
- Reduce the parameter velocity to 100 mm/s; this is the speed at which the cutter will load the OPOS marks.



From the cutter's front panel, select: **Menu > System setup > Settings > Velocity**.

Set the cutting speed in the **RIP** as required:



• Add top and bottom margins to the Print&Cut job: set to at least 30 cm.



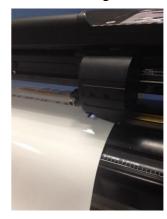
The top and bottom edges of the plot can turn wavy, making it difficult for the OPOS sensor to read the HP barcode correctly and apply an accurate alignment.

#### With no margins



Wavy edges

#### With margins



The substrate is flat in the cutting zone

#### 4.2 Self-adhesive vinyls

According to their manufacturing processes and their chemistry, self-adhesive vinyls are classified as follows:

- Calendered monomeric
- Calendered polymeric
- Cast polymeric

Calendered types are more susceptible to undergoing deformations caused by high temperatures during the printing process. When this happens, the dimensions of the print will change and this will affect cutting accuracy.

We recommend decreasing the curing temperature to 110°C for print modes **8p\_6C\_100%** and **10p\_6C\_110%**, especially for **calendered monomeric** and **calendered polymeric** self-adhesive vinyls.

Important: It is possible to go below 110°C but, depending on the media used and the characteristics of the image, it may be necessary to reduce the ink density as well in order to guarantee sufficient ink curing.

## 4.3 Transfer media

You can find a detailed description and guidance on how to customize your clothing in the following document: Customized Clothing with HP Latex Printers.



## 4.4 Transparent / translucent films

It can be difficult for the HP OPOS sensor to read the HP barcode correctly on transparent and translucent substrates.

Use a white background, such as a **white self-adhesive vinyl** to prevent incorrect readings:





#### 4.5 Laminates

- With HP Latex printers you can laminate immediately after printing. Use the overlaminate recommended by the manufacturer of your self-adhesive vinyl (SAV).
- Cut any part of a laminate film that extends beyond the edges of the self-adhesive sheet.
- Avoid the presence of bubbles, especially in the HP barcode and OPOS zones.

#### 4.6 Perforated SAV

The OPOS sensor cannot read the HP barcode correctly on some perforated films due to the nature of the substrate liner, which causes colored areas to have a different color density between the vinyl and the liner area, as shown in the following picture.

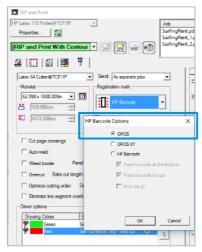


For this reason, neither OPOS XY marks nor HP Barcodes work well.

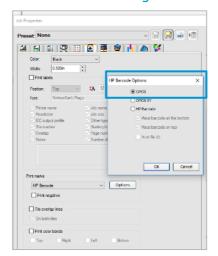
In order to be able to **cut a job on perforated SAV**, we suggest the following workflow:

1. When preparing the job, select **OPOS** as registration marks or print marks.



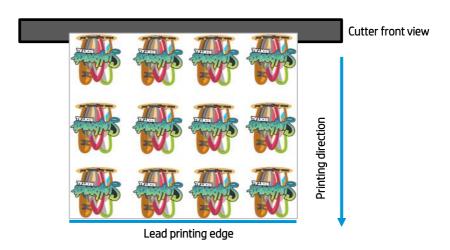


**Production Manager** 

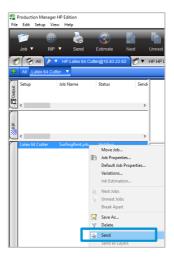


Important: Note that, as no barcode is used, you cannot take advantage of this feature (e.g. unattended cutting or bow compensation).

- 2. Send the job to **Print**.
- 3. Load the printed job on the cutter.



4. As there is no barcode, the cutter will not start cutting immediately after loading the substrate. Send the job to the cutter from the **HP Production Manager** cutter queue.



5. The cutter front panel will indicate "set tool above first mark." Then move the sensor with the arrows to the first OPOS mark and press



The OPOS sensor will locate and read all OPOS marks and start cutting.

Important: Note that, as no barcode is used, each job to be cut will have to be sent separately from the **Production Manager** cutter queue.

#### 4.7 Self-adhesive textiles

These materials are used for interior decoration, in-store construction and property design, in gastronomy and hostelry, and other applications in the private sector. One example of such materials is Mediatex® WallCover Textile, from Junkers and Müllers (HP Latex ink certified).

For **printing** on this material, use the certified substrate preset found in the printer's online search, or from the PrintOS Media Locator website:

#### https://www.printos.com/ml/#/medialocator

When **cutting**, you can follow the settings below as a starting point for setting the cutting parameters (using the **standard** knife type):

	Vice cut	Cut through (FlexCut)	
	Kiss cut	Full	Half
Knife pressure	190 g		
Velocity	400 mm/s		
Pressure		260 g	150 g
Length		10 mm	0.8 mm
Velocity		Auto	

Check if the result is satisfactory. If not, change any of the above parameters. Reducing the velocity can improve the result. Avoid using cutting speeds greater than 400 mm/s (16 ips) with cutting pressures above 170 g.

Important: The HP Latex Cutter cannot cut textiles other than self-adhesive textiles that have a liner. For regular soft signage textiles other types of cutters should be used.

## 4.8 Reflective graphic films

Reflective graphic films offer nighttime and daytime visibility for graphics and advertising. Their uses may include:

- Wraps for vehicles, straight trucks, semi-trucks and semi-trailers.
- Smooth and textured wall graphics, indoor and outdoor signs, including point-of-purchase and displays.
- Bus graphics.
- Small-format original equipment manufacturers' (OEM) decorative and identification graphics, cautionary and safety labeling.

Important: The following recommendations are limited to flexible, enclosed lens, retroreflective films, not thicker than 0.5 mm (0.8 mm with optional sandblast blade), and non-prismatic reflective films. Check the cutting instructions for your specific graphic material.

- Make sure the material is compatible with HP Latex inks and printers (PrintOS Media Locator).
- From the cutter front panel, select a new **User** to save the new configuration specific to your reflective material: **Menu > User**.



- Check and modify accordingly the cutting settings for **kiss-cut** and **cut-through (FlexCut)** (see 3.5.5). Note that some films may require the use of a sandblast knife or may not be recommended for cut-through jobs.
- **Very important**: Perform **Cal. Media** calibration (see 3.5.5); this calibrates the reflection levels of the marker color and the substrate color.

# 5. Useful links

#### Product documentation:

- http://www.hp.com/go/latex115printandcut/
- http://www.hp.com/go/latex315printandcut/
- http://www.hp.com/go/latex335printandcut/

#### User manuals:

- http://www.hp.com/go/latex300/manuals/
- HP Latex cutter

#### Print and Cut training:

http://www.hp.com/go/latex300printandcut/training

#### Print and Cut videos:

- Print and Cut Solution
- Customizable clothing
- Floor graphics
- Window graphics

#### Further information:

- http://www.hp.com/supportvideos
- http://www.youtube.com/HPSupportAdvanced