Cookbook – Durable Textiles

for HP Latex Printers

Table of contents

1   Overview

Who can benefit from reading this document?

This document is intended for:

- Owners and operators of HP Latex printers with the 3rd generation of inks, with a special focus on the HP Latex 5XX, HP Latex 1500, HP Latex 1XX, HP Latex 3XX and HP Latex 3X00.

- HP Latex customer support, marketing and sales organizations.

This document provides information about:

- Textile brands, references, types, classifications and their main applications within the scope of Soft Signage.

- A list of textiles that have been tested to guarantee good/very good anti-dry rubbing and resistance to scratches compared to the materials we have tested so far.

- All the information and resources that we are offering for each material from the list.
    - Whether the substrate requires an ink collector or not.
    - The recommended media presets (per printer) that the customer must use in order to get the best results with each material (speed, amount of ink and other additional settings).
    - The different options for customers for finding media presets and the previously mentioned information.

- The key customer requirements regarding the improved performance and/or durability as well as the regulations used in order to verify image resistance, the test results and the thresholds.

- Information about media vendor distribution.

2 An introduction to textiles

Why do we need more durable textiles/fabrics?

The demand for textiles for signage is growing and HP Latex Technology presents a practical solution for leveraging textile signage opportunities, in particular.

- Textiles provide soft touch finishes, great color pops, and are considered to be more *premium* than vinyl or paper. Due to this fact, the end customer perceives a higher value.

- Textiles are lighter, wrinkle-free, etc., they are easier to transport, mount and store, making the whole process cheaper due to the fact that the shipment and the storage costs drop.

- The environmental regulations are changing and impacting PVC-based substrates and traditional textiles. Media vendors are moving toward non-PVC based materials and the traditional market is moving toward digital printing.

HP Latex Printers are compatible with a range of textiles such as polyesters and natural fiber blends. HP Latex prints are odorless and, thanks to the flexibility of the ink, the feel of an un-coated material is maintained.

This document provides tips and tricks for getting the best results from HP Latex printers when printing on textiles.

What are the main types of textiles?

The terms 'textile' and 'fabric' are used interchangeably in the industry. Some of the common types of textiles are:

- **Heavy knits** – Textiles with a weight of 250 – 400 g/m² (23 – 37 g/sq.ft). They are used as an alternative to PVC banners due to their soft touch and attractive finish. There is a very wide variety available, including both coated and uncoated types.

- **Soft knits** – Textiles with a weight of 250 g/m² (23 g/sq.ft) or less. They have a look and feel which is softer and flows better than that of heavy knit materials and are commonly used indoors at retail/POP locations, exhibition stands and displays, and also for interior decoration.

- **Backlit textiles** - Provide an attractive alternative to traditional lightboxes made from PVC banners or PET film.

- **Flags** – A thin and almost transparent textile, commonly associated with country and event 'flags' but also increasingly used for eye-catching signage and decoration applications. The indoor teardrops which are referred to in the following pages, also have a weight lower than 120 g/m² (11 g/sq.ft).

- **Stretch textiles** – They can be heavy or soft knit depending on the kind of yarn that is used to manufacture the base of the material. The main application for this kind of textiles is SEG— Silicone Edge Graphics. The final application, whether it is frontlit or backlit, does not matter.

3 Recommended list of textiles

Classification

As of April 25th, the following table offers a list of substrates classified according to the previous chapter:

Media Vendor name	Material	Soft Signage – Frontlit			
		Heavy knit	Soft knit	Stretch	Indoor teardrops
Aurich Textilien (TVF in NA)	DigiPanorama 3172FRL	●			
	DigiFacination 6178FRL				●
	DigiCompetition 2264EFRL		●		
	Supernova 3179FRL	●			
Endurafab	Frontlit		●		
	Frontlit FR		●		
	Frontlit Premier	●			
	Frontlit Stretch			●	
	Frontlit Stretch FR			●	
Berger	4001-6 PES Tafetta 55 FR				●
	4915-26 XXL Spinnaker FR				●

Media Vendor Distribution

The following table offers a list of substrates classified according to the previous chapter:

WIDTH – **3.2m (126")**

Media Vendor name	Distribution			
	APJ	EMEA	Latin America	North America
Aurich Textilien		●		●
Endurafab				●
Berger	●	●	●	●

WIDTH – **1.6m (64")**

Media Vendor name	Distribution			
	APJ	EMEA	Latin America	North America
Aurich Textilien		WIP		●
Endurafab				●
Berger	●	●	●	●

Tested and validated media presets

The following table offers the print modes recommended in order to get better results. Once the media preset is installed, there will normally be two different print modes—*production* and *quality*:

Media Vendor	Material	HP Latex 3X00	HP Latex 1500	HP Latex 5XX
Aurich Textilien	DigiPanorama 3172FRL	10p170% 14p260%	12p170% 14p260%	16p185% 20p200%
	DigiFacination 6178FRL	10p170% 14p200%	12p170% 14p200%	16p170% 20p185%
	DigiCompetition 2264EFRL	10p170% 14p260%	12p170% 14p230%	16p185% 20p200%
	Supernova 3179FRL	10p170% 14p260%	12p170% 14p260%	16p185% 20p200%
Endurafab	Frontlit	10p170% 14p200%	12p170% 14p200%	-
	Frontlit FR	10p170% 14p200%	12p170% 14p200%	-
	Frontlit Premier	10p170% 14p230%	12p170% 14p230%	-
	Stretch	14p170% 20p200%	12p170% 14p200%	-
	Stretch FR	14p170% 20p200%	12p170% 14p200%	-
Berger	4001-6 PES Tafetta 55 FR	10p120% 14p130%	12p120% 14p130%	20p120%
	4915-26 XXL Spinnaker FR	10p130% 14p150%	14p130% 18p150%	16p110%

Key test to getting durable soft signage textiles

One important property of printed textiles used in applications like retail PoP and exhibition graphics is their "dry rubbing" performance. The regulation used to measure the dry rub test is **ISO 105-X12.**

1. Why is the dry rubbing test so important?

Textiles with good dry rubbing test results are suitable for sewing, finishing and transporting and are easily installable without being damaged. HP is constantly analyzing new materials to even further increase the range of textiles that are excellent for use with HP Latex Inks.

2. How to measure dry rubbing

One of the sections of ISO 105-X12 determines the full procedure to test this property. Applying a downward force of 9±0.2 Newtons, at a rate of one cycle per second, the Taber Linear Abraser rubs 20 times back and forth in a straight line (10 times forward and 10 times backward) along a track on the dry sample, using a bleached cotton rubbing cloth, which is evaluated to determine how it has been stained.

3. How to read the dry rubbing test result

After completing the test, three parameters are evaluated: *image damage*, *gloss change* and the *staining of the cotton rubbing cloth*. Those textiles with good or excellent results are scored as a 4 or 5, respectively. Textiles printed with HP Latex Technology and with a dry rubbing performance equal to or better than 4 are the perfect fit for your soft signage applications.
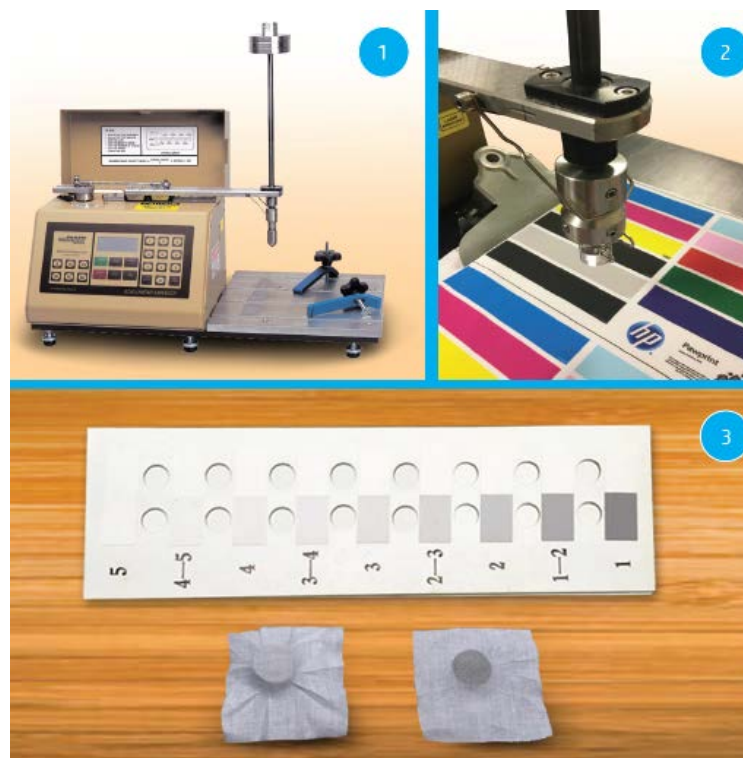
1. *Taber Linear Abraser*
2. *Testing a textile sample*
3. *Color fastness to rubbing is categorized from 1 to 5. The higher the number, the better the fastness.*

4 Where to find the media presets

There are different ways to search, find and install the media presets:

Using the Media Locator

All the profiles are available at the HP Media Solutions Locator, which is an application within the PrintOS: https://www.printos.com/ml/#/medialocator.

1. Click on the **HP Latex** button.
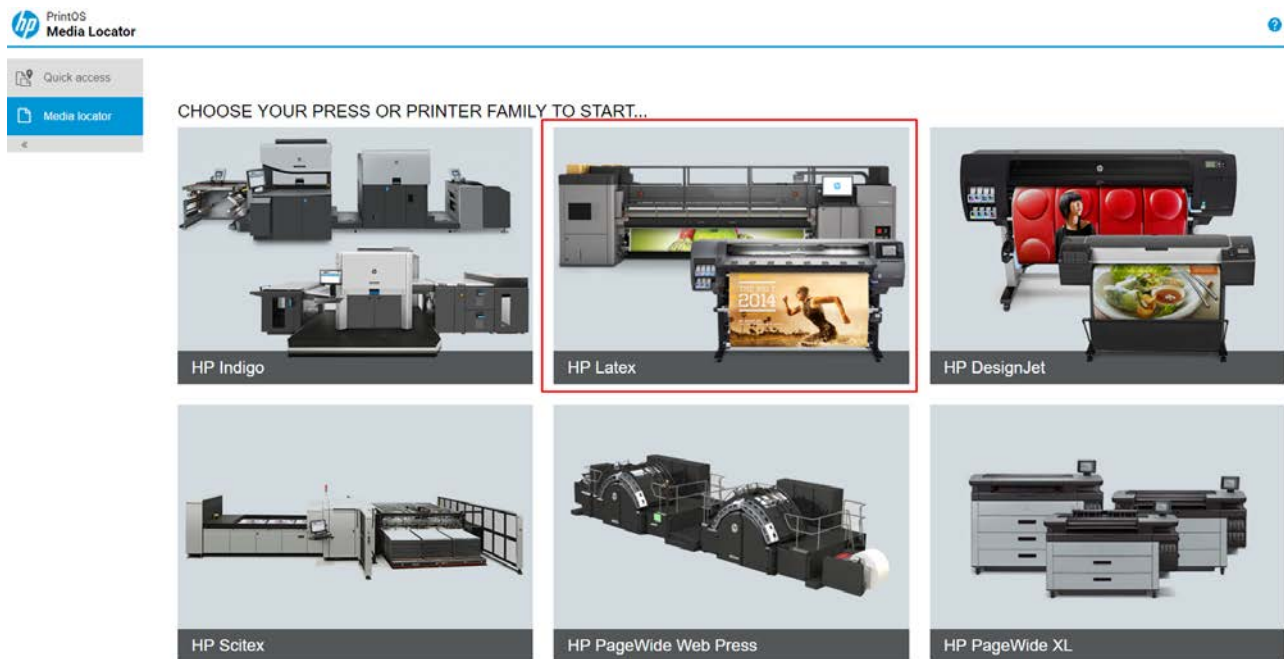
2. The Filter button or the Search field can be used to find the textiles recommended on the previous list.
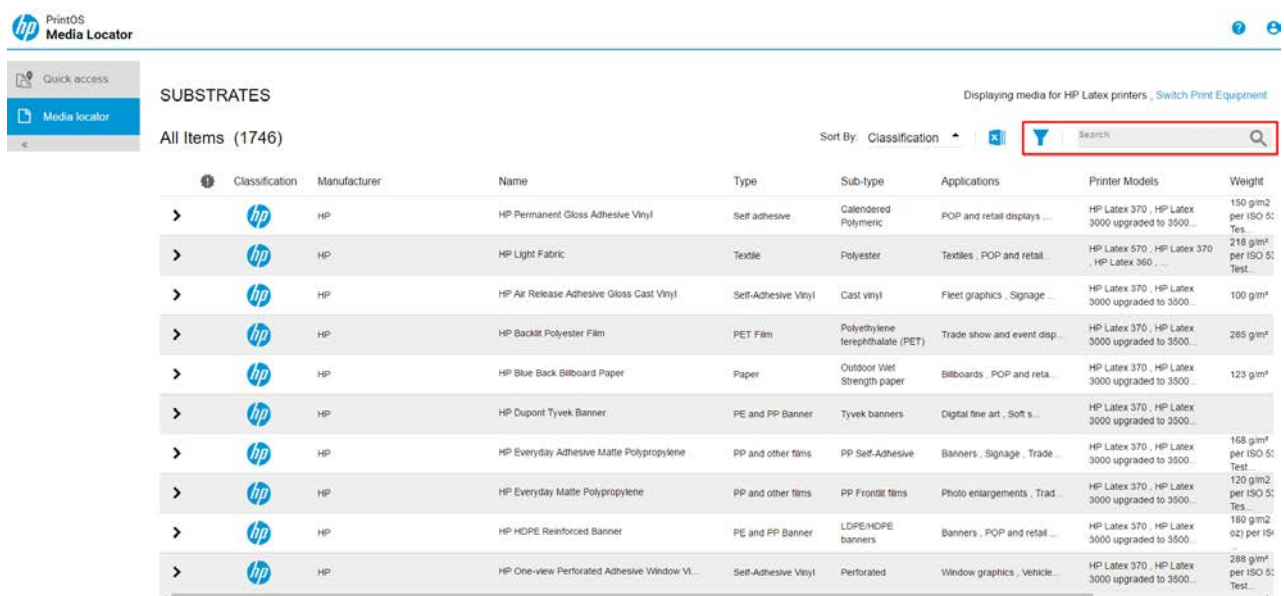
3. If the filter button is pressed, a drop-down list will be shown; it can be filtered by: classification, manufacturer, type, sub-type, application, printer model, etc.
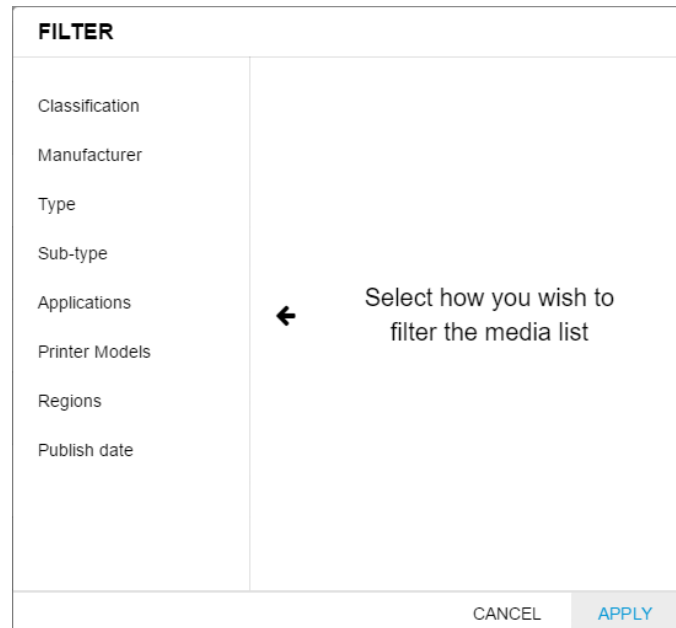
4. The materials from the list have their own Media Type, called 'Durable Textiles.'
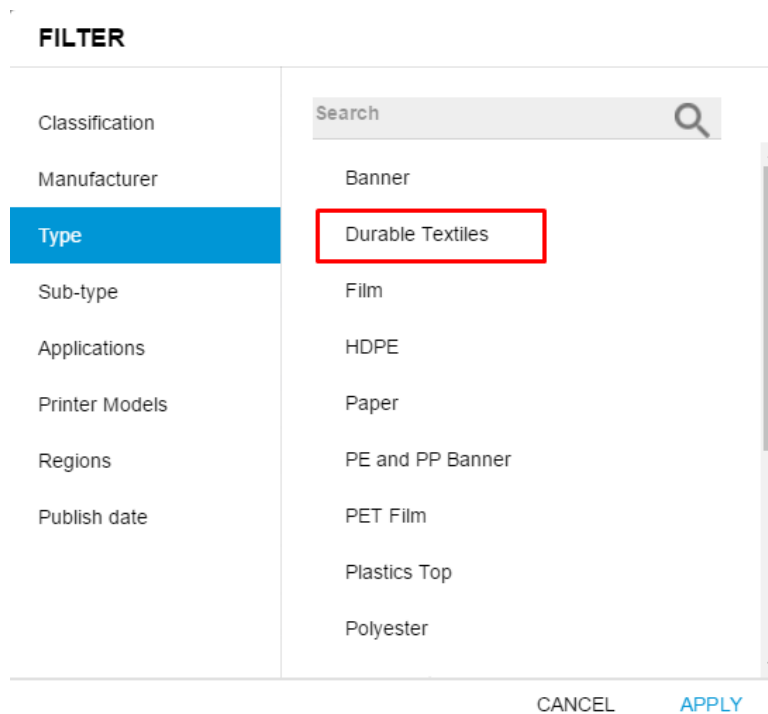
The list with the materials that this document is referring to will be shown.

5. By clicking the "Show details" button on the left side of a row, information about the ink collector needed and the results of the ISO 105-X12 dry rubbing test can be seen in the technical notes area.
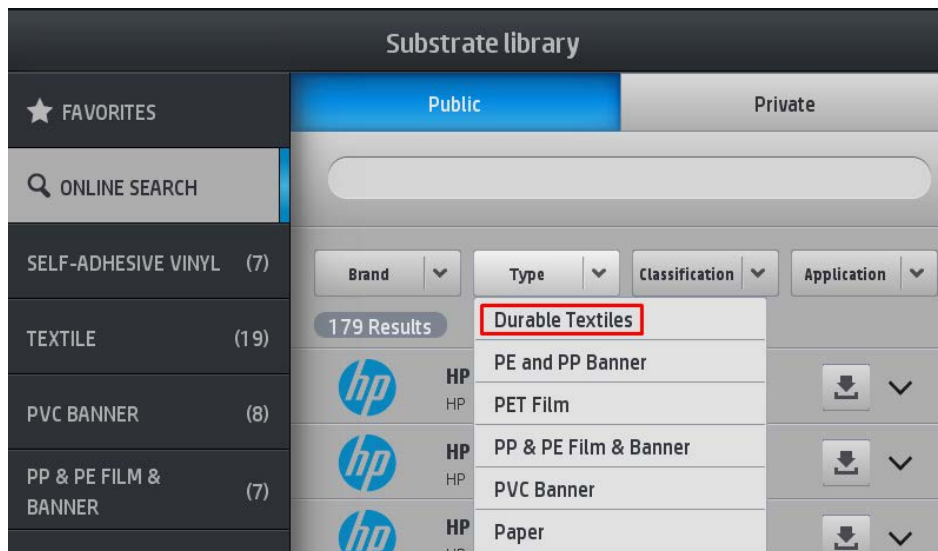
HP Latex 3XX and 5XX printer front panels

The media presets can also be installed through the front panels of the printers:

1. Click on the **Online Search** button.
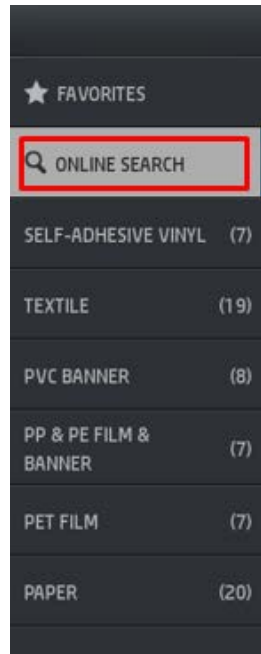
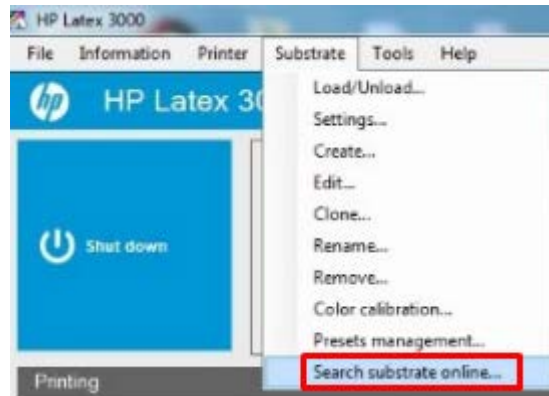2. Filter by type and select **Durable Textiles** from the drop-down list in order to see the recommended materials.

3. Click on the **Download** button to install the media preset; the printer will automatically synchronize with the RIP.

HP Latex 3X00 and 1500 printer IPSs

A media preset can also be installed through the IPS (the printer's PC):

1. Click on **Substrates** and select **Search substrate online** from the drop-down list.

2. Filter by type and select **Durable Textiles** from the drop-down list in order to see the recommended materials.

3. Click the **Download** button (it can be found on the right side of the window), then the **Status** column, and wait until the installation process is finished (the icon will change to).

5 Ink collector installation and usage recommendations

Before printing on porous textiles, you must install the Ink Collector Kit, which is available as an accessory, in order to protect the printer from the ink that falls through the substrate. The kit should be removed before printing on non-porous substrates.

To find out how to install the Ink Collector Kit, please read the user guide:

- **HP Latex 1500** – Chapter 9 – Accessories.
- **HP Latex 3000 series** – Chapter 3 – Handle the substrate.
- **HP Latex 500 series** – Chapter 3 – Handle the substrate and troubleshoot substrate issues.
- **HP Latex 36X and 37X only** – Chapter 3 – Handle the substrate and troubleshoot substrate issues.

Ink collector usage required per material

The recommendation per media and all the HP Latex printers can be found in the following table.

Media Vendor name	Material	Is the ink collector required?
Aurich Textilien (TVF in NA)	DigiPanorama 3172FRL	YES
	DigiFacination 6178FRL	YES
	DigiCompetition 2264EFRL	YES
	Supernova 3179FRL	NO
Endurafab	Frontlit	YES
	Frontlit FR	YES
	Frontlit Premier	NO
	Frontlit Stretch	YES
	Frontlit Stretch FR	YES
Berger	4001-6 PES Tafetta 55 FR	YES
	4915-26 XXL Spinnaker FR	YES

6 How to use the media loading accessory with the HP Latex 500 and 300 series

The loading accessory is designed to help you with loading banner/textile/mesh substrates. It is recommended when loading such substrates, but not obligatory.

To find out how to use the media loading accessory, please read the user guide:

- **HP Latex 500 series** – Chapter 3 – Handle the substrate and troubleshoot substrate issues.

    IMPORTANT – Click the **Use loading accessory** button on the front panel so that printer is able to change the force of the pinchwheels in order to prevent wrinkles on flimsy materials.
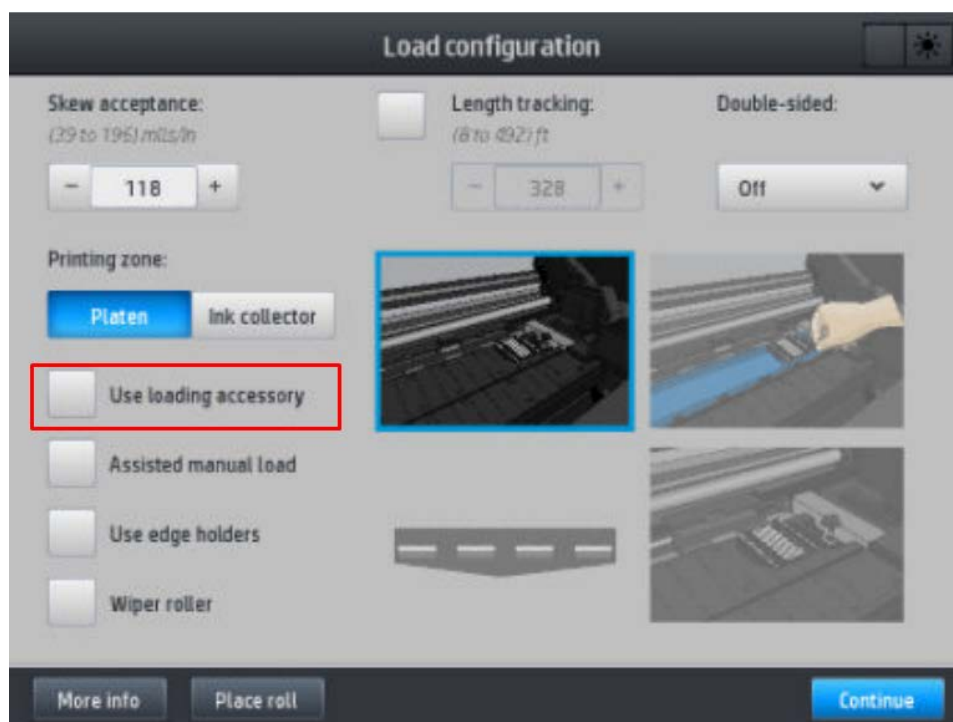
- **HP Latex 36X and 37X only** – Chapter 3 – Handle the substrate and troubleshoot substrate issues.

7 Post processing

Depending on the finishing/coating that the materials display, an improvement in terms of durability has been observed when applying extra heat after printing:

Media Vendor	Material	Is extra heat needed?	Tested settings: Temperature and dwell time
Aurich Textilien	DigiPanorama 3172FRL	NO	-
	DigiFacination 6178FRL	NO	-
	DigiCompetition 2264EFRL	NO	-
	Supernova 3179FRL	NO	-
Endurafab	Frontlit	NO, but improves*	200ºC / 392ºF 60 seconds
	Frontlit FR	NO, but improves*	200ºC / 392ºF 60 seconds
	Frontlit Premier	NO, but improves*	200ºC / 392ºF 60 seconds
	Frontlit Stretch	NO, but improves*	200ºC / 392ºF 60 seconds
	Frontlit Stretch FR	NO, but improves*	200ºC / 392ºF 60 seconds
Berger	4001-6 PES Tafetta 55 FR	NO	-
	4915-26 XXL Spinnaker FR	NO	-

* The durability (for instance: the dry rub, wet rub and scratchability tests) of some materials from the list is improved after adding the settings recommended in the previous table. There are different kinds of devices that can be used to achieve this temperature: Oil drum calender heat transfers, infrared heating systems, clamshell heat presses, etc. The most important thing is to guarantee that the surface of the printed material heats up to 200ºC (392ºF).

8 Additional maintenance operations when printing on porous materials

HP Latex 3X00

The following is a part of the "Summary of maintenance operations" section that can be found in the user guide within **Chapter 8 – Hardware maintenance**, where typical maintenance operations are explained as follows:

- Weekly cleaning

- 125 liter maintenance

- 500 liter maintenance

- 1,500 liter maintenance

When printing on textiles, since most of them are porous, they require print modes with a higher number of passes and more ink compared to other substrates that can be printed on with HP Latex inks. The following table describes the additional maintenances* that the customer will need to perform.

	Tasks	
3L	**Clean** collector, aerosol filter, protector, printer output and platen and carriage	15 min
40L	**Clean** aerosolinlet, condensate **Replace** collector foams	30 min
500L	**Clean** curing fans, dryers lamps glass, dryer fans **Check** protector and media edge holders	60 min
1500L	Clean impigning plate Replace ink collector **Replace SMK – Textile** (Curing parts, Scan axis pats, carriage parts, drop detector, web wipe engage system, diverter wheels)	2 days

* These maintenances are scheduled within HP Print Care (also explained in chapter 7 of the user guide) together with other maintenance tasks.

HP Latex 1500

The following is a part of the "Summary of repair kits and maintenances" section that can be found in the user guide within **Chapter 10 – Hardware maintenance**, where the usual maintenance operations are explained as follows:

- Weekly cleaning
- 450 liter maintenance
- 900 liter maintenance
- 1,500 liter maintenance
- 3,000 liter maintenance

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* These maintenances are scheduled within HP Print Care (also explained in chapter 8 of the user guide) together with other maintenance tasks.

HP Latex 3XX and HP Latex 5XX

Due to the porous nature of textile media, the ink on the media tends to evaporate differently than with other materials. Evaporated components of the ink may condensate on cold surfaces of the printer, leaving an oily finish.

- To prevent condensate under the printed material from transferring into the printed job, always use the output platen protector accessory as described in **Chapter 3 – Handle the substrate and troubleshoot substrate issues** of the user guide.

- To prevent drops of condensate from falling into subsequent jobs, perform the following user maintenance after any intensive usage of textiles (approximately after every roll):

Clean the curing system internal cover lip

1. Turn off the printer.
2. Open the main window.
3. With a soft cloth or piece of paper, remove any oily drops that have formed on the edge of the cover's internal lip.
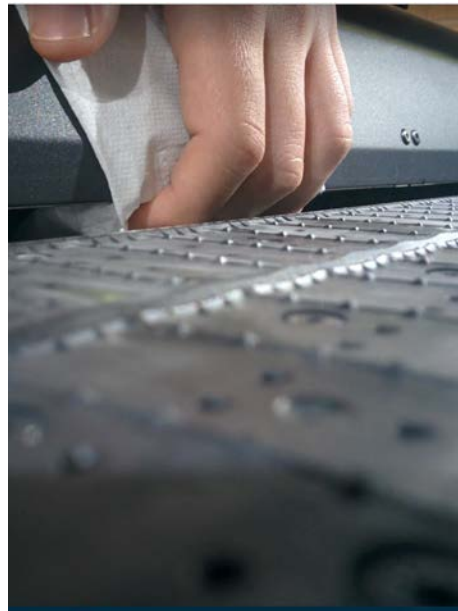
Clean the output platen

1. Turn off the printer.
2. Remove the output platen protector accessory.
3. With a soft cloth or piece of paper, clean any oily drops that may have condensed under the accessory.
4. Make sure to properly clean all the steps, screws and features of the platen.

Help yourself by wrapping the cloth around a soft tool to reach the inner parts of the output platen.

With certain textile materials, due to rougher media edges, an increased distance to the material and particular aerodynamic effects, it is more likely that the line sensor gets dirty and loses sensitivity. If the line sensor is dirty, you may notice that:

- An opaque media cannot be found or its width cannot detected: The printer uses the line sensor to "find" the media's edges. If the sensor is dirty it may not be able to discriminate between the print platen and the media itself.

- The printer is unable to determine the level of usage of the maintenance cartridge: The printer uses the line sensor to read a special pattern on the maintenance cartridge to determine its usage. If the sensor is dirty it may not be able to read the pattern.

If the problems above start to occur frequently, you may need to clean the line sensor in order to regain the full functionality of the printer.

Cleaning the line sensor

From the front panel, perform a maintenance cartridge replacement and remove the maintenance cartridge.

1. Turn off the printer.
2. With the printer off, open the window and manually move the carriage to the side.

You will have access to the line sensor from the maintenance cartridge door.

3. With a soft cloth or piece of paper, clean the line sensor. Be careful not to touch the printheads.
4. Close the window and the maintenance cartridge door and turn on the printer.
5. Finish replacing the maintenance cartridge.

IMPORTANT: It is not required to perform any maintenance on the line sensor if you do not see the problems described above. An excessive cleaning of the sensor may lead to undesired issues and the risk of damaging the printheads.

HP Latex 3XX only

Due to hardware differences, the 3XX series printers are more susceptible than the 5XX series ones to the accumulation of condensation and aerosol when printing on all media, especially textiles. The procedures described above may need to be performed more frequently or more intensively on the 3XX series.

In addition to the procedures described above, perform the following two maintenance cleanings after an intensive use of textiles:

Clean the vapor removal array

With a soft cloth or piece of paper, clean any oily drops under the vapor removal array (the outer array of fans).

Pay special attention to the left and right corners.
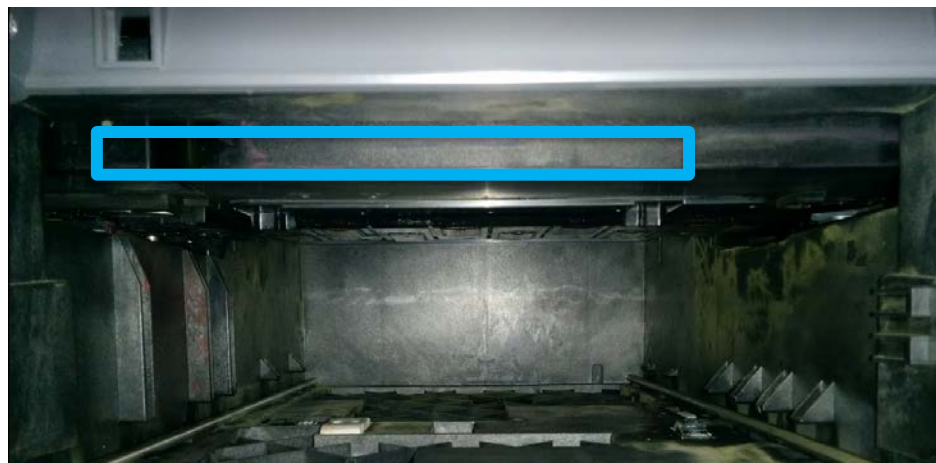
Clean the front of the carriage

From the front panel, perform a maintenance cartridge replacement and remove the maintenance cartridge.

1. Turn off the printer.
2. With the printer off, open the window and manually move the carriage to the side.

You will have access to the carriage from the maintenance cartridge door.

3. With a soft cloth or piece of paper, clean the exterior of the carriage.
4. Be careful not to touch the line sensor or the printheads.
5. Close the window and the maintenance cartridge door and turn on the printer.
6. Finish replacing the maintenance cartridge.