

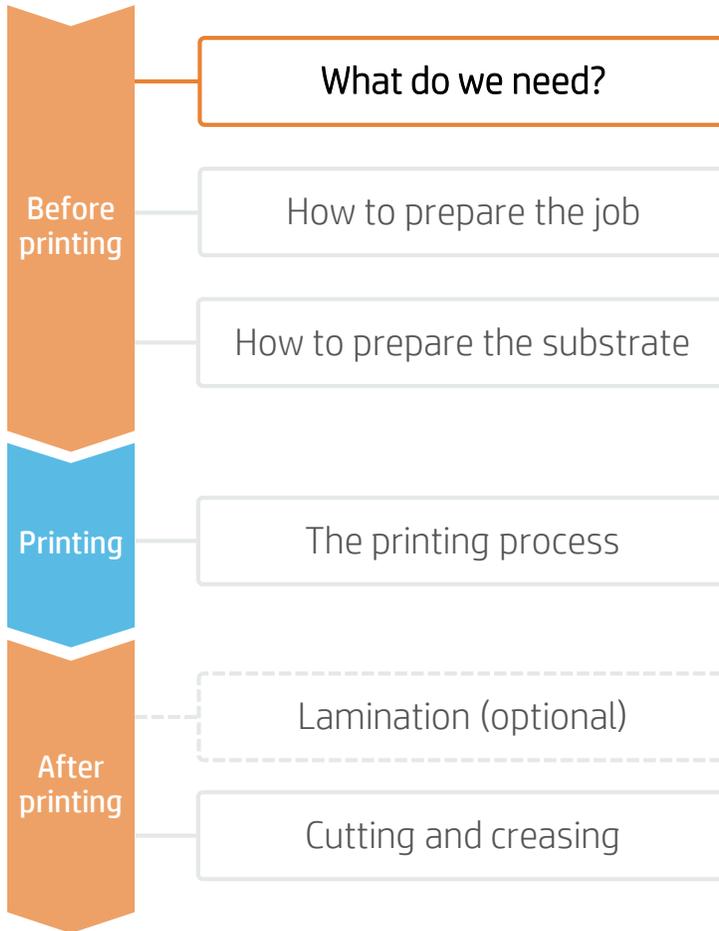
# How to print packaging

This document will explain how to print packaging on different types of cardboard with R Series printers.

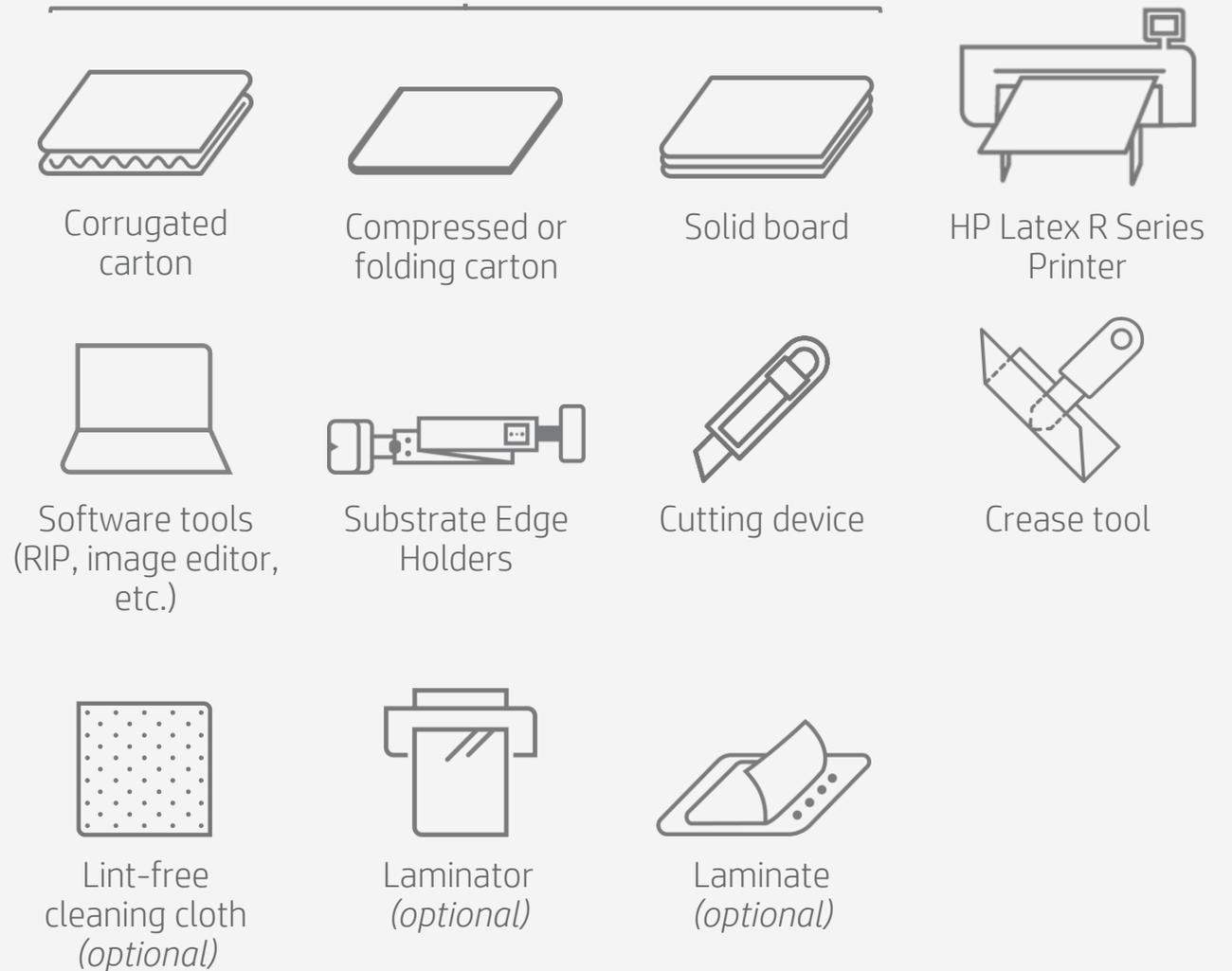


# How to print packaging

## What do we need?

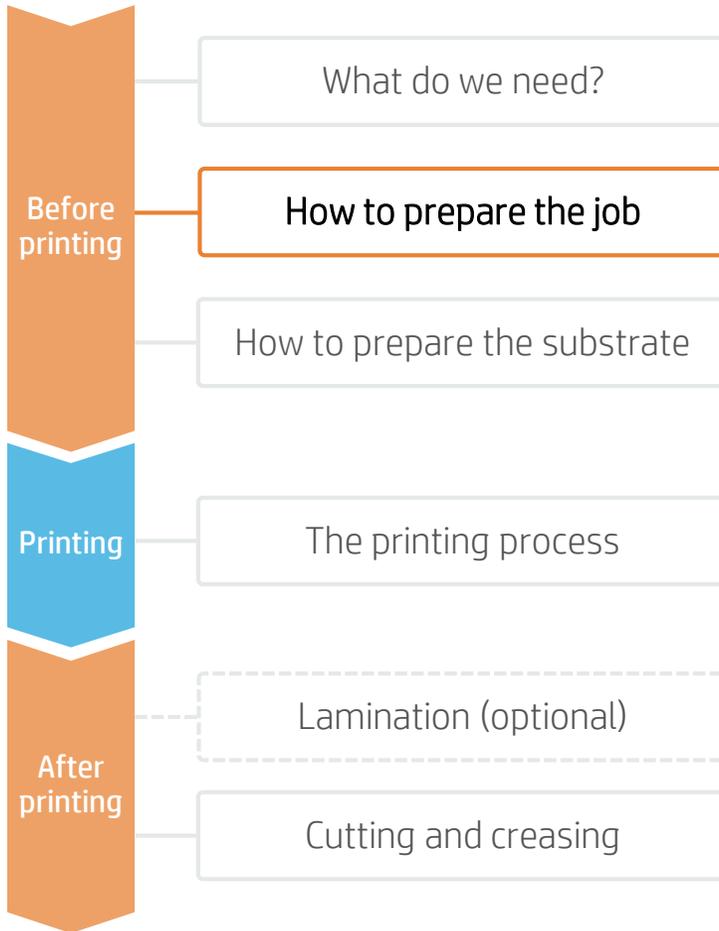


### Cardboard sheets



# How to print packaging

## How to prepare the job



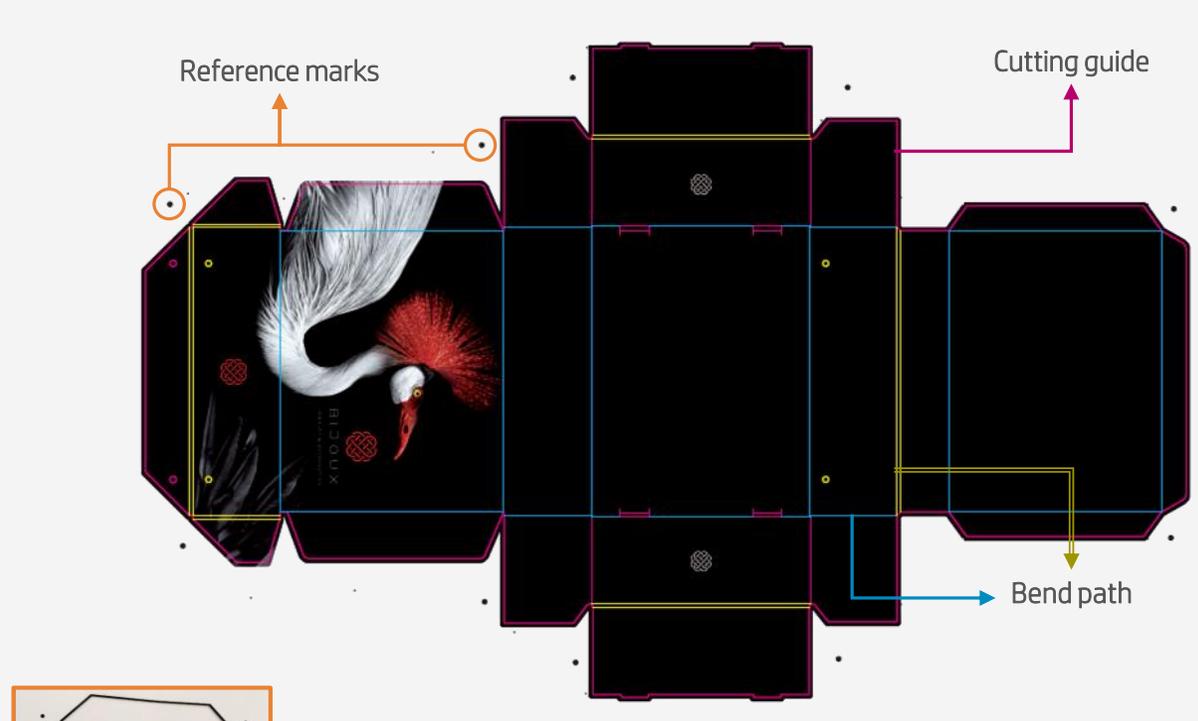
### 1. Create the file

Create the structure of the packaging to be printed.

**TIP:** As an alternative to using design software, there are many libraries from which it is possible to download and modify structures that can be seen in 3D. An example of this is the Zünd Design Center, which is compatible with Zünd cutters.

### 2. Add the cutting and creasing layers

Once the packaging structure and the image have been created, add one layer with the cutting guides, another layer with the bend paths, and a third one with the reference marks.

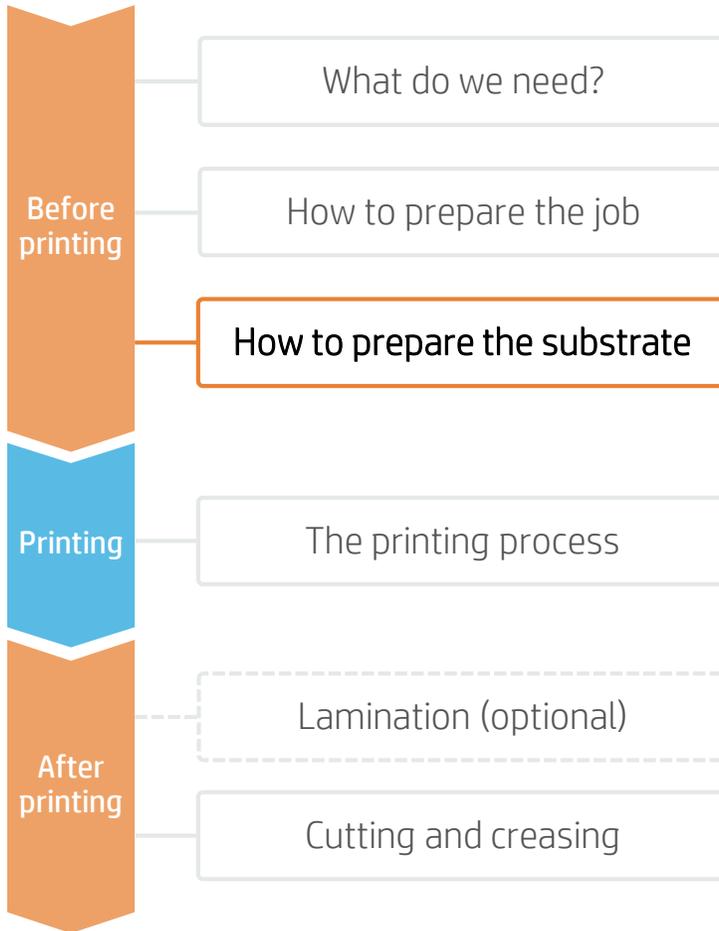


**TIP:** Leave some margin between the edge of the images and the cutting layers to ensure there will not be any unprinted surfaces in the final product.



# How to print packaging

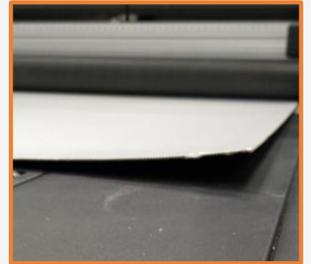
## How to prepare the substrate



### 1. Storage

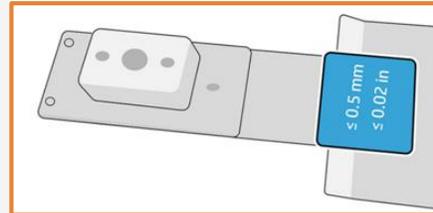
Cardboard sheets must be stored flat and in similar conditions as the printing area to avoid deformation of the media (19-23 °C and 55-65% RH).

 **TIP:** Handle the sheets with care, especially the edges. They can bend and crease easily, causing crashes.



### 2. Clean the surface

Clean the surface that will be printed with a lint-free cloth to remove any dust and debris.



### 3. Assemble the substrate edge holders

Assemble the substrate edge holders considering the thickness of the sheet to print. Usually the module for thinner substrates ( $\leq 0.5$  mm) will be used for folding cardboard, while the other module ( $> 0.5$  mm) will be used for corrugated or solid boards.

 **TIP:** Follow the instructions indicated in the Printer IPS to assemble and install the substrate edge holders. You can access this guide through the loading substrate panel, when selecting the edge holders.



### 4. Install the substrate edge holders

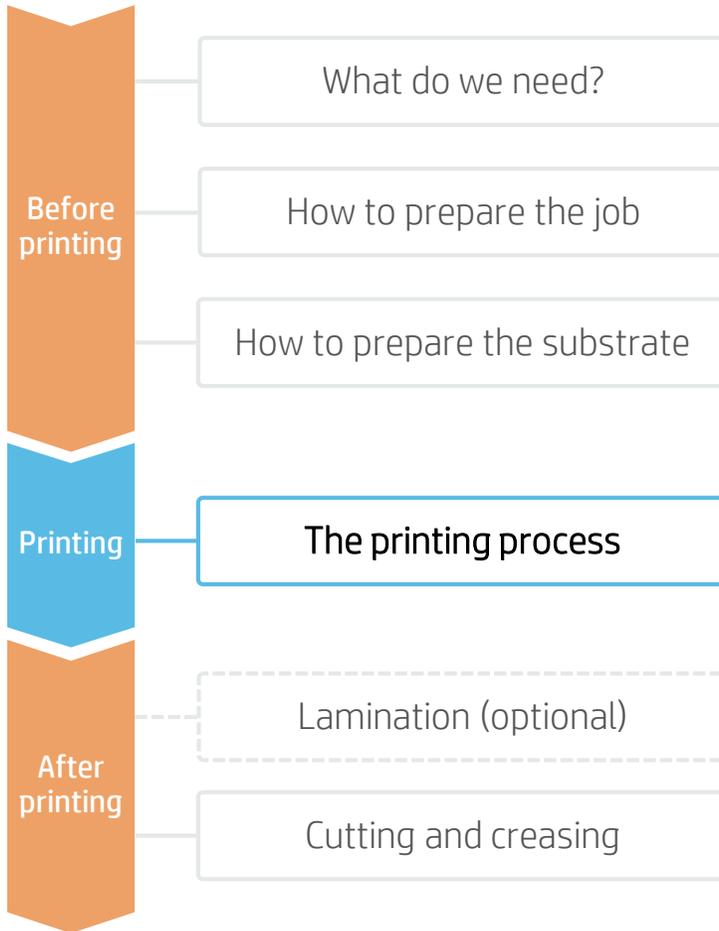
Move the scan-axis beam to the topmost position and install the substrate edge holders with the width of the sheet to print.

### 5. Install the alignment-bar extenders

Move the scan-axis beam to the printing position and install the extenders next to the edge holders.

# How to print packaging

## The printing process



### 1. Check the edges

Before printing, check the edges of the sheet and correct the ones that are bent to avoid any crashes.



### 2. Check the sheet is flat

Also check that the sheet is not curved, since the edge holders will not correct this deformation but move it to the center, which may cause crashes.

### 3. Load the substrate

Load the substrate onto the printer, considering the type of cardboard it corresponds to.

### 4. Print settings

The R Series printers are compatible with several types of cardboard. However, for luxury packaging solid board is recommended due to its smooth surface, which allows you to achieve a high quality result.

In the following table you will find the recommended settings to print packaging with the R Series printers:

White substrate	Color and Kraft substrate	
	Underflood white	Spot white
6p 100% ink	W160 25p 120% ink	W160 11p 120% ink
8p 110% ink	W260 33p 120% ink	-

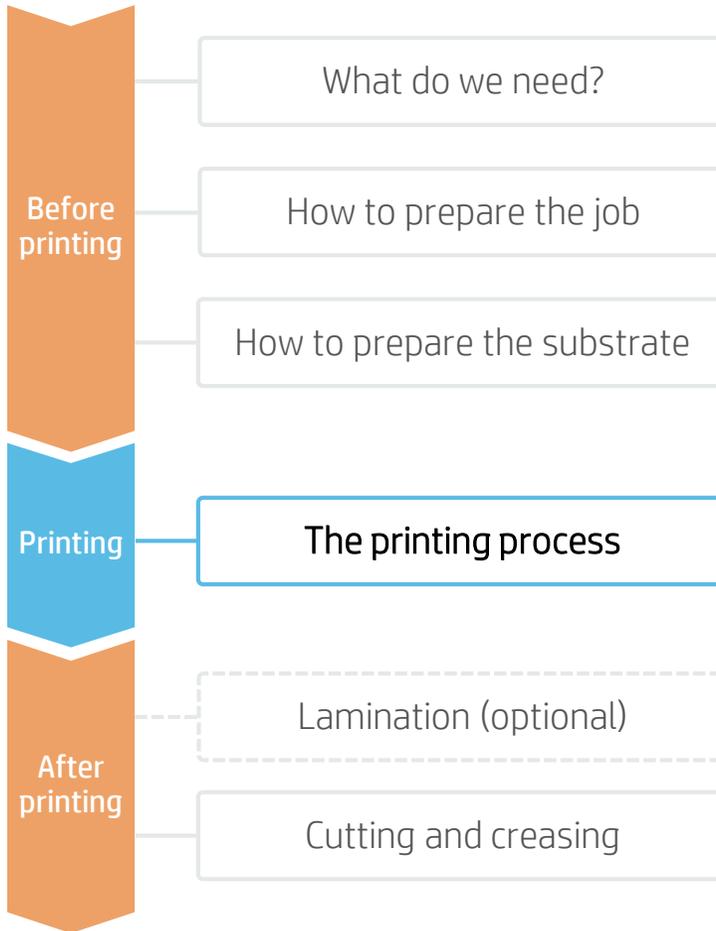


**NOTE:** The substrate used to perform our tests is the Iberboard Off-white board, which is certified in the HP PrintOS Media Locator:  
<https://www.printos.com/ml/#/homesubstrateLocator>

**TIP:** Uncoated substrate may absorb the ink. Therefore, for the same quality, they may require a higher ink density or the use of an underflood white printmode.

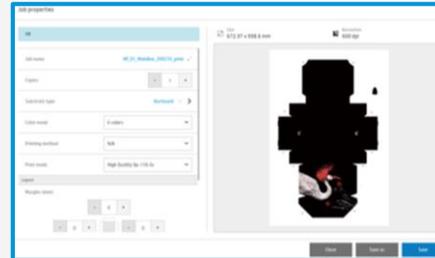
# How to print packaging

## The printing process



### 5. Enable the curing lever

Cardboard is very sensitive to temperature and humidity, so it must be printed in Heat Sensitive Mode. To do this, just move the lever as indicated by the front panel.

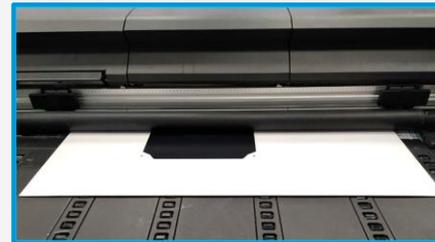


### 6. Select the job to print

Select the ripped job and drag it to the printer queue.



Press print



### 7. Use the output roller

Use to output roller to reduce deformation of the substrate after the curing process.



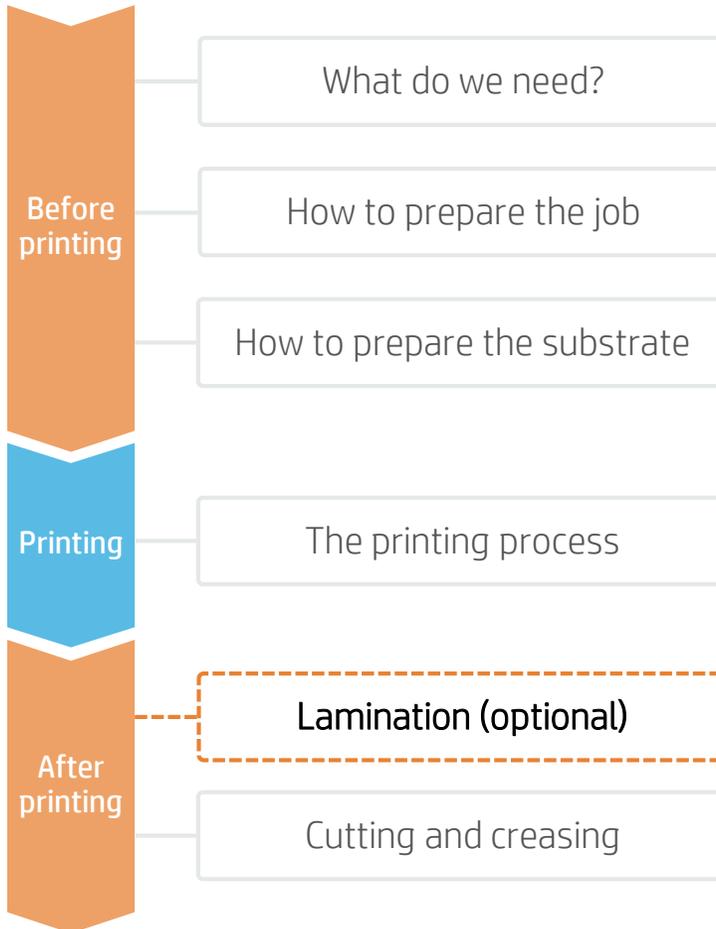
### 8. Wait 15 minutes

In some cases, especially samples thinner than 1.5 mm (0.6 in), the substrate may deform. Allow substrate to rest for 15 minutes to recover its initial shape.



# How to print packaging

## Lamination (optional)



← Solid board without lamination

**NOTE:** For solid boards, especially the thicker ones, lamination is required to ensure the substrate can be bent without breaking. However, corrugated and compressed cardboard do not need to be laminated due to their higher flexibility. Therefore, it is the substrate which makes lamination a requirement, not the inks.

Even if it is not a requirement, lamination can be used to improve the quality of a printed sample.



### 1. Load the film

Load the roll of film and separate it from the liner. Then, attach the liner to the upper roller and the adhesive film to the lower roller.

**TIP:** For better flexibility and adjustment to the substrate, a low grammage film is recommended ( $\approx 32 \mu\text{m} / 0.0013 \text{ in}$ ).

### 2. Laminator settings

Select the appropriate lamination temperature depending on the film in use ( $\approx 120^\circ\text{C}$ ) and wait until it reaches the selected temperature.



**NOTE:** There are two types of lamination for cardboard: Cold lamination and Hot lamination. Hot lamination is the most common for packaging, since the cost of the films is more affordable.



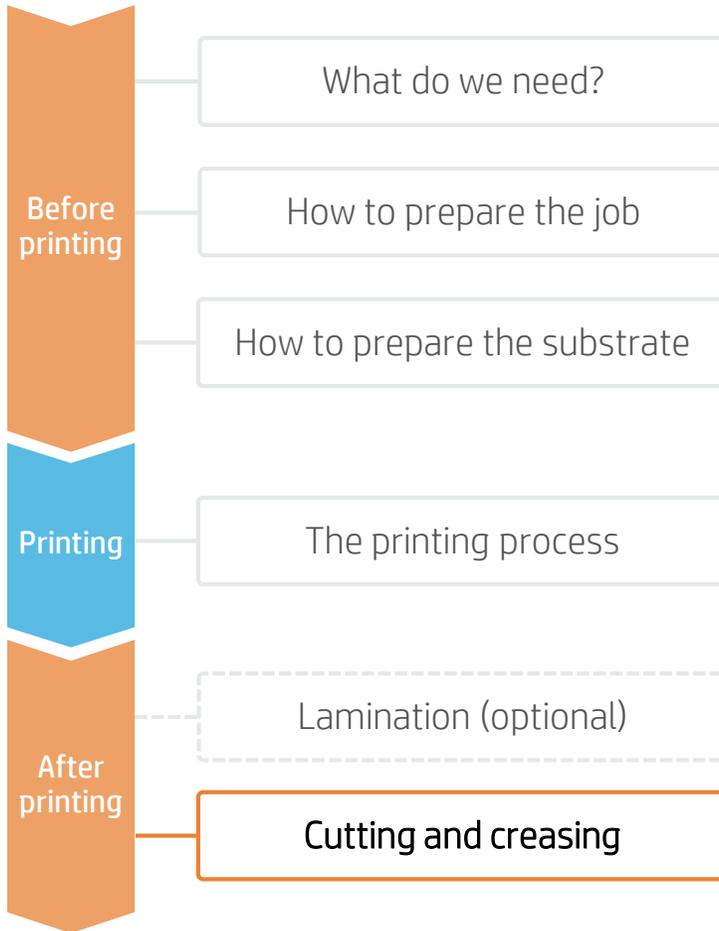
### 3. Laminate the sheet

When the laminator is ready, feed in the sheet to be laminated.

**TIP:** When printing corrugated cardboard, pay special attention to the pressure of the rollers to avoid deforming the flute.

# How to print packaging

## Cutting and creasing



### 1. Creasing

Use the creasing wheel to generate the bend paths required to build the final product.

**NOTE:** Corrugated sheets with several flute layers may require the use of the V-cutting tool to be bent.



### 2. Cutting

Use a table cutter to cut the printed sample to its final dimension.

**NOTE:** The settings used in the tests performed by HP on a Zünd XL3200 table cutter are the ones shown below:

Cutting corrugated cardboard and solid board:

- Head: Electric Oscillation Tool (EOT)
- Knife: Z21
- Cutting Speed: 200 mm/s (8 in/s)

Cutting compressed or micro-fluted corrugated cardboard:

- Head: Universal Cutting Tool (UCT)
- Knife: Z10
- Cutting Speed: 800 mm/s (31 in/s)

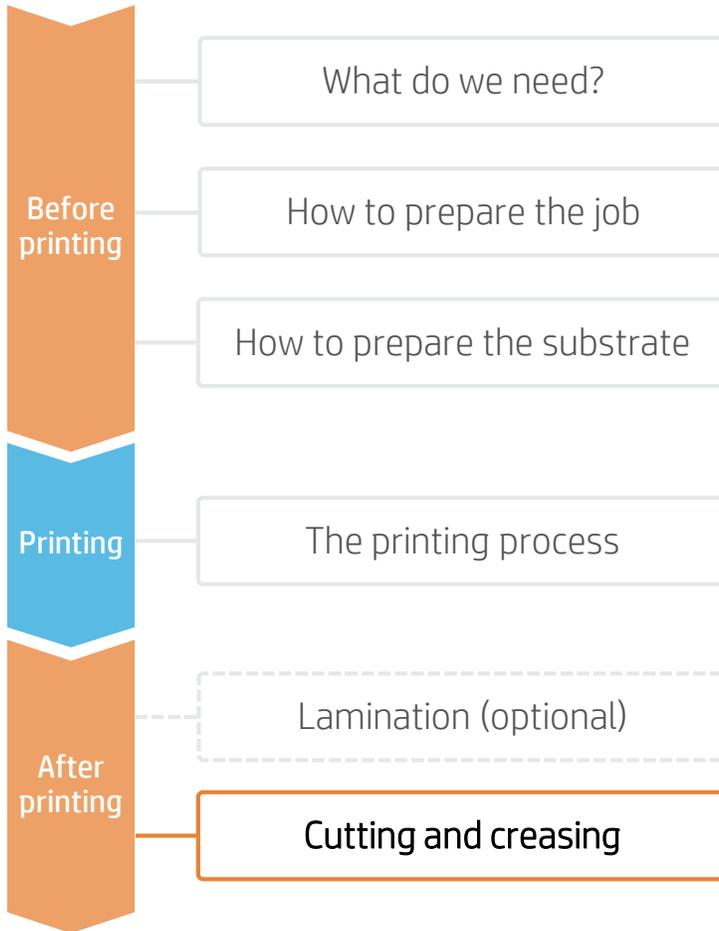
Creasing:

- Head: Creasing Tool Type 1 (CTT1)
- Knife: Creasing Wheel C103
- Folding depth:
  - 50% (corrugated and compressed)
  - 70% (solid board and thick corrugated)
- Pressure:
  - 8000g (corrugated and compressed)
  - 12000g (solid board and thick corrugated)

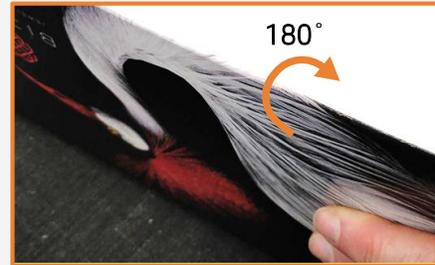


# How to print packaging

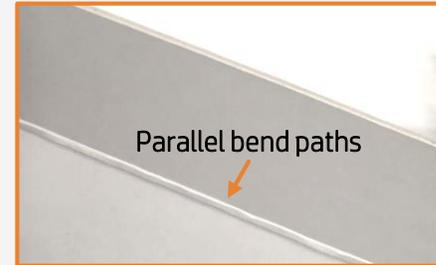
## Cutting and creasing



Corrugated (1mm)



Solid board (1mm)



**TIP:** Corrugated and compressed cardboard sheets can be bent 180° without cracking the ink or damaging the substrate. However, solid boards, even laminated, cannot be bent more than 90° due to the lower flexibility of the substrate.

Nevertheless, it is possible to achieve the same result by creating two parallel bend paths with some space between them and bending up to 90° each line. The space between the lines depends on the thickness of the substrate. For example, for a 2 mm thickness substrate, a 3-4 mm distance between parallel bend paths is recommended.

### 3. Build the box

Bend the sheet through the bend paths and build the final box.





## How to print packaging

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