# Kappa 180 – Kappa 320
## Durst Digital Textile – Printing Added Value

# Durst Digital Textile Printing

Digital inkjet technology from Durst provides the solution to the current challenges faced by the textile industry: increased flexibility, greater productivity, higher efficiency, better print quality, more designs, more colors and a greater margin as a result. At the same time, Durst inkjet technology reduces production costs, production time, the amount of energy required and the burden on the environment.
Durst inkjet technology is an economical and ecological evolutionary step and offers greater added value in comparison to traditional production methods.

### Durst. The specialist for industrial inkjet applications

Durst is the global leader in supplying digital inkjet printing systems for industrial applications. High performance, print quality, reliability and flexible areas of application are unique selling points across all the industries where Durst inkjet technology is used.
Over the past ten years, Durst has had a significant influence on the adaptation of digital printing technologies in the areas of glass, large-format printing, ceramics, labels and textiles.
In 2010, Durst introduced a dye sublimation textile printer called the Rhotex 320.
It immediately set a new standard for quality in the industrial soft signage segment.
With the Kappa 180, which was introduced in 2011, Durst presented the clothing industry with a high-performance inkjet printer which fulfilled new demands and customer needs. In late 2013, Durst introduced the Kappa 320 specifically for the home textile sector. It had already been put into production by leading European home textile manufacturers.

# Durst technology – 24/7

Durst installs selected components in all Kappa inkjet printers to guarantee long-lasting quality, high performance and reliability.
These printing machines are low-maintenance, designed for 24/7 operation and unmatched in terms of versatility.

### Durst QuadroZ print head technology
Durst QuadroZ print head technology arranges the colors on the 8-channel print heads symmetrically (mirrored). In doing so, precise color application is ensured for bi-directional printing directions. Banding, which can result in conventional asymmetrically arranged print heads at high speeds, is thus prevented. Color homogeneity is achieved over the entire printing width without reducing the production speed. QuadroZ print head technology now enables printing on textile materials using water-based inks over a specially hardened, fiber-resistant nozzle plate featuring droplet sizes of 7-21 pictoliters. 6,144 nozzles per color achieve a resolution of up to 1,000 x 1,200 dpi, and an automatic nozzle cleaning system guarantees constant readiness for use. 32 print heads print 8 colors in CMYK, orange, red, blue and gray without modulations or density fluctuations.

### Kappa inks
Durst has developed its own Kappa inks especially for textile printing using inkjet technology. They enable printing on various textile fibers using eco-friendly, water-based dispersion, reactive and acid inks. The reactive ink system (Kappa Ink R) is GOTS-certified and achieves brilliant color results not only on cotton, linen and viscose, but also on silk and polyamide.

### Magnetic linear drive
The print carriage system developed by Durst is equipped with a magnetic linear drive to continuously achieve precise printing results. A carrier designed and produced by Durst is the basis for the precision required to print flawlessly and reliably, with a tolerance of 2 micrometers.

With the Kappa 180 and Kappa 320, Durst offers two high-performance industrial printers for digital textile production. Both feature the same inkjet technology, but differ in printing width. The Kappa 180, with a maximum printing width of 195 cm, is ideal for production in the clothing industry, but is also used for furniture and fabric manufacture.
The Durst Kappa 320, which was developed specifically for home textile needs, features a maximum printing width of 330 cm.
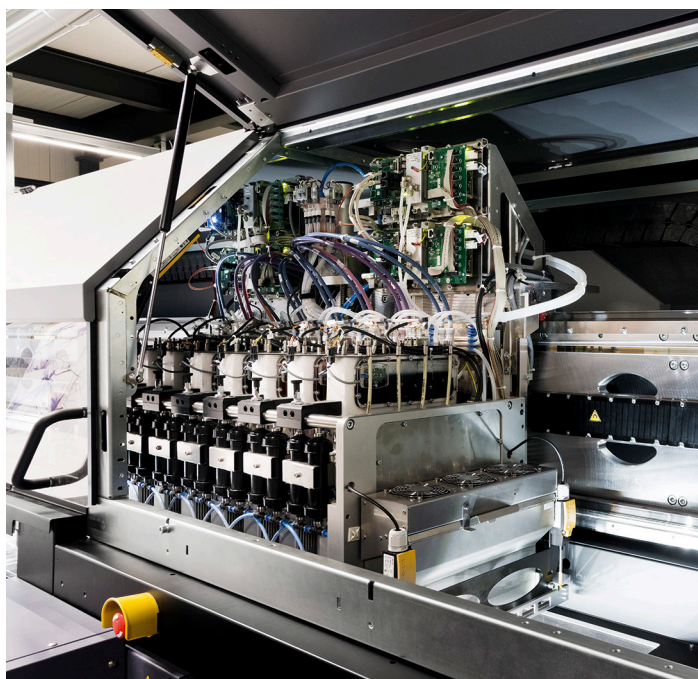




## Symmetrical print heads

Thanks to mirroring of the print heads, the same color sequences are printed in each printing direction. This prevents banding.

## Capping station

The print head capping station hermetically encloses the nozzles, thus ensuring the immediate availability of the printer, including during longer pauses in work. Continuous spitting of the individual nozzles is also carried out.

## Ink degassing

The ink is degassed directly before the print head so as to eliminate even the smallest gas bubbles in the ink. This enables the nozzles to remain stable, thereby guaranteeing consistent and continuous printing results.

## Anti-crash system

The new anti-crash system features sensors on the print carriage and at the material feed for automatic lifting of the print carriage in case of material unevenness and to avoid damaging of the print heads.

This enables it to digitally print interior decor and decorative materials such as blankets, bed linen, table linen, curtains, drapes and advertising materials such as flags and banners across their full width. In standard mode, the Kappa 320 produces with a print quality of 800 x 600 dpi and a maximum production speed of 890 square meters per hour. The Kappa printing systems feature Durst's own QuadroZ print head technology, where the colors are arranged symmetrically on the 8-channel print heads to ensure total color homogeneity across the entire width of printing.

### Fast cleaning cycle
The cleaning station carries out full nozzle cleaning for all colors within 160 seconds. The new cleaning concept also allows to enable individual color rows to be cleaned.

### Closed ink system
The print heads and inks are matched to each other and come from a single source. This guarantees the functioning of the entire system.

**Ink dust extraction**

The ink dust extractor attached to the print carriage means haze-free printed images, cleanliness inside the printer and lower maintenance costs.

**User-friendly touchscreens**

User-friendly touchscreens allow intuitive operation of the printer. All relevant parameters of the respective printing job are configured and can be called up at any time so that a re-print can be carried out under identical conditions.
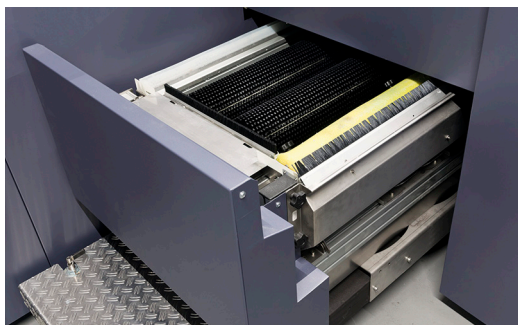


**Online ink consumption calculation**

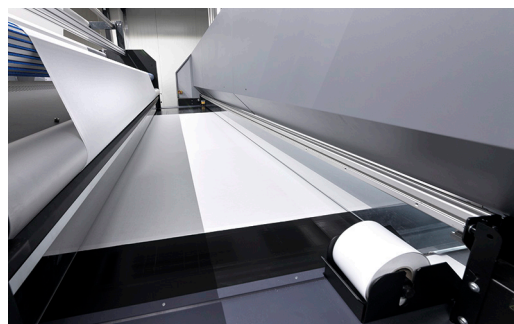The Kappa software enables precise ink quantity calculation per square meter for each printing job.

## Washing system

To ensure optimum adhesion of the printed material, the Kappa printing systems feature a special washing system equipped with two rotating brushes continuosly water-sprayed, a sponge and dry-squeegees.
The washing system enables printing on fibrous and dirty materials at high speeds without limitation.





## Online nozzle control

Online nozzle control enables the operator to print a test stripe without interrupting the printing job so as to analyze the printing process and take immediate action should individual nozzles fail or insufficient ink be applied.
This guarantees process stability.

## Precise material guidance.

In order for various different textile materials to be unrolled, printed on and rolled up, the Kappa printing systems feature state-of-the-art dancer rollers, expander rollers and center and circumference winders.



## Dryer unit

The Durst Kappa printing systems feature a dryer unit with special heat insulation resulting in an efficiency level of over 80%.
A broad range of materials can be dried optimally thanks to the adjustable parameters, such as temperature, circulating air quantity, distribution and exhaust-air quantity, accessible on the touchscreen. Continuous speed control using an infrared sensor and homogeneous air speeds in the entire drying area guarantee even drying results and prevent smudging caused by the material not advancing. In addition, 1 or 3 passages can be selected for defining the drying cycle. The drying settings can be stored as a profile for different textiles and are thus available for reproduction at any time.
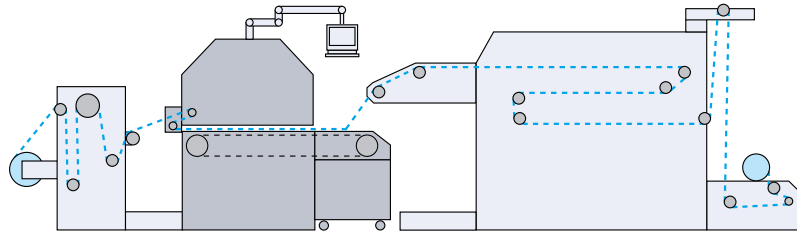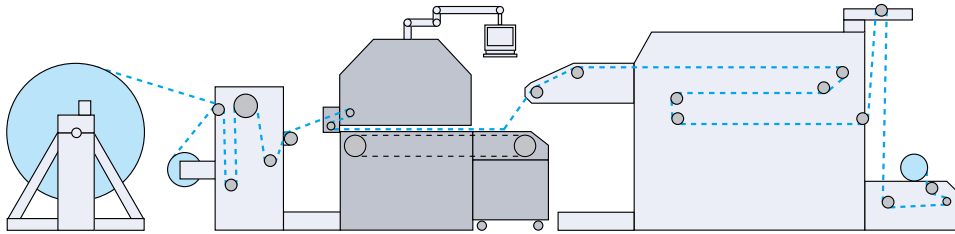
## Kappa 180

### Version 1

Kappa 180 printing system equipped with Corino material feed with a mechanism for small roll winding with a lattice roller, dancer roller and expander roller. Includes pressure roller and washing system, dryer for material guidance with 1 or 3 passages, material discharge with display and roller bed winder for small rolls.
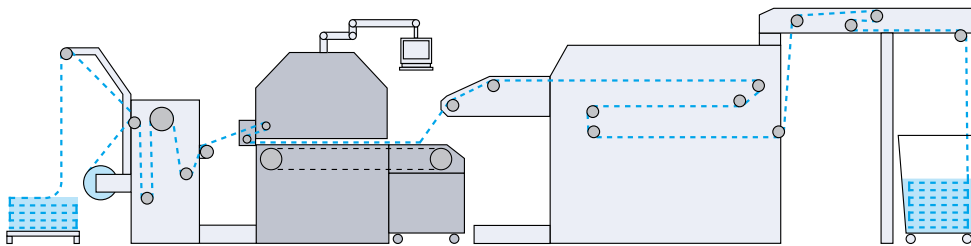
### Version 2

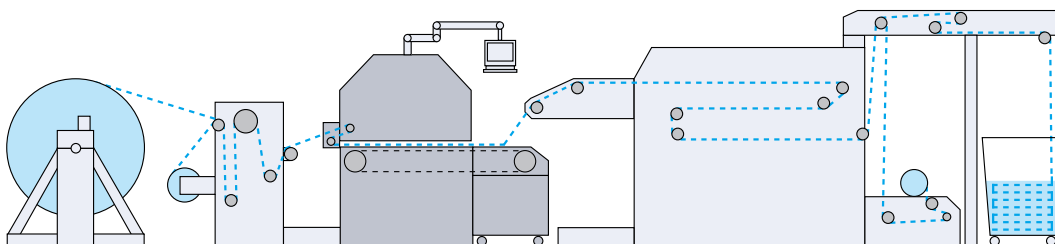As version 1, plus mobile center winder.

### Version 3

As version 1, plus feed-in arm for folded fabrics as well as exit unit for folded fabrics, without bed winder for small rolls
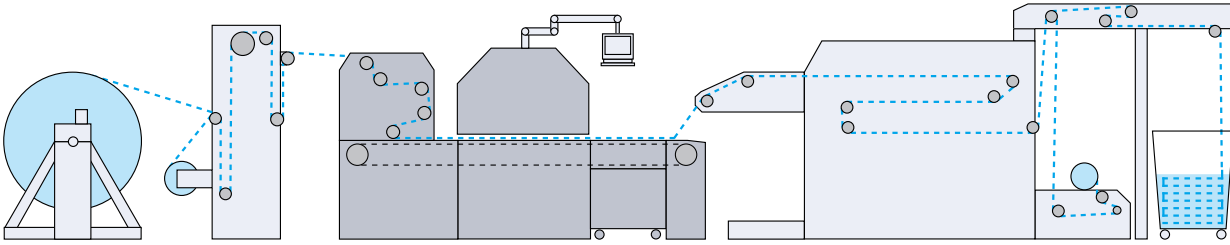
### Version 4

Kappa 180 printing system equipped with mobile center winder, Corino material feed with a mechanism for small roll winding with a lattice roller, dancer roller and expander roller. Includes pressure roller and washing system, dryer for material guidance with 1 or 3 passages, material discharge with display, roller bed winder for small rolls and a folding unit.
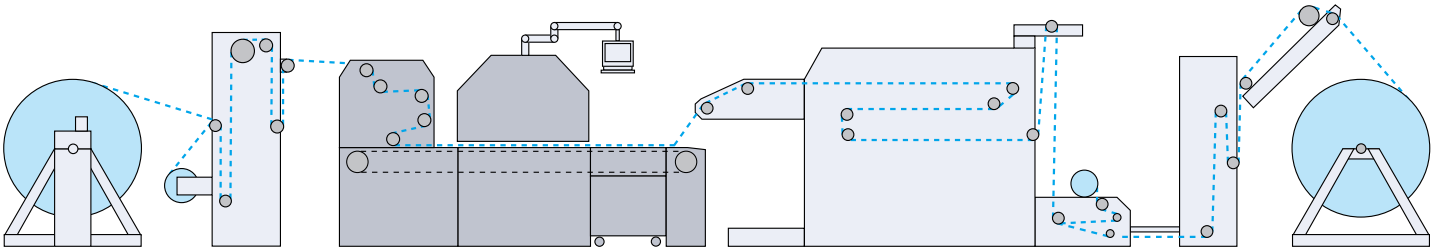
# Kappa 320

## Version 1

Kappa 320 printing system equipped with mobile center winder, Corino material feed with a mechanism for small roll winding with a lattice roller, dancer roller and expander roller. Includes heated pressure roller and washing system, drier for material guidance with 1 or 3 passages, material discharge with display, roller bed winder for small rolls and a folding unit.
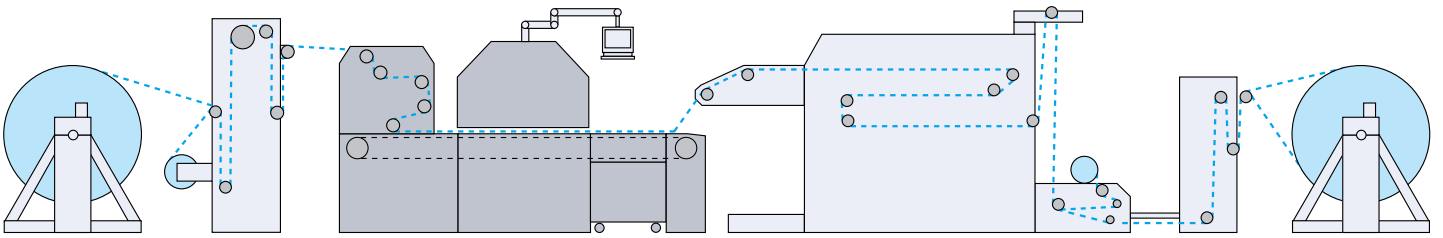


## Version 2

As version 1, plus podium and Corino material discharge with integrated circumference winder.
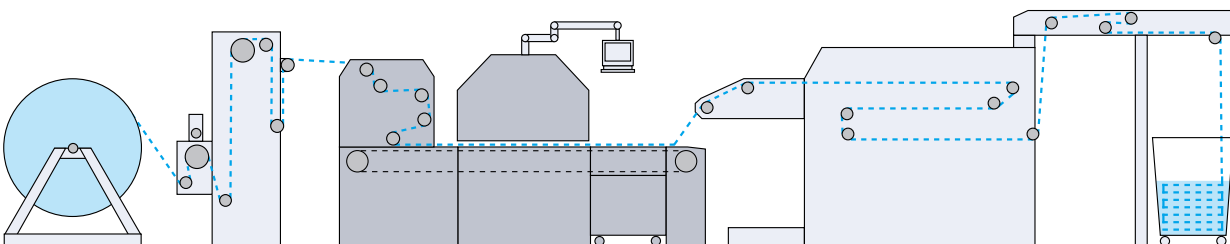


## Version 3

As version 1, plus podium and Corino material discharge with center winder.



## Version 4

Kappa 320 printing system equipped with Corino material feed with seperate feed-in roller for unwinding non motorized A-Frames with a lattice roller, dancer roller and expander roller. Includes heated pressure roller and washing system, drier for material guidance with 1 or 3 passages and material discharge with a folding unit.

# Inks

In addition to eco-friendly water-based dispersion and acid inks, Durst also offers a GOTS-certified reactive ink system for the Kappa printing systems.

**Kappa inks**
- Kappa Ink D (dispersion ink system)
- Kappa Ink R (reactive ink system)
- Kappa Ink A (acid ink system)

Kappa Inks are characterized by a rich black, high brightness and excellent printing results and are impressive in every important area, e.g. color space, image quality, uniformity and color fastness.

## The right ink system for the job

| Kappa Ink D | Kappa Ink R | Kappa Ink A |
|---|---|---|
| Suitable for synthetic fibers, polyester and polyester blends with a polyester proportion of more than 50%. For use on flags and banners, outdoor signs, POP, automotive fabrics, home textiles. | Suitable for cotton and cotton blends with a cotton proportion of more than 60%, as well as polyamide, silk and viscose. For use on home textiles, drapes, bed and sofa linens and clothing. | Suitable for silk, silk blends, polyamide and wool. For use on clothing, accessories and swim wear. |

## Available color configurations for the ink systems

| Kappa Ink D | Kappa Ink R | Kappa Ink A |
|---|---|---|
| Cyan | Cyan | Cyan |
| Magenta | Magenta | Magenta |
| Yellow | Yellow | Yellow |
| Black | Black | Black |
| Red | Red | Red |
| Blue | Blue | Blue |
| Orange | Orange | Orange |
| Gray | Gray | Gray |
| | Light Magenta | Light Magenta |
| | | Fluo Yellow |
| | | Fluo Pink |

## Color fastness

Our inks are tested intensively and consistently get very good results in accordance with all common ISO standards:
- Light fastness - ISO 105-B02
- Wash fastness - ISO 105-B02
- Water fastness (extreme) - ISO 105-E01
- Fastness with acid and alkaline pretreatment - ISO 105-E04
- Weather fastness - ISO-B04
- Resistance to wet and dry rubbing - ISO 105-X12

## Pre- and post-treatment.

As with all textile printing systems, the material must be pretreated to achieve optimum printing results. If pretreated properly, the ink droplets penetrate the fibers without dispersing or spreading uncontrollably. Post-treatment is also critical for good results, as every fiber has different properties and responds differently to the various types of post-treatment, such as steaming, washing and calendering.

This is why professional pre- and post-treatment and sound knowledge of the digital workflow, digital color management and ink application are important for achieving outstanding printing results. Thanks to our expertise, you'll be able to achieve color brilliance, work with a large color space, be assured of full color fastness and use less ink. You will achieve optimum detail-rich results with your Kappa printing system.

Our textile experts have many years of experience and will accompany you from the beginning as you get production up and running.

# Certifications

## ISO 9001
The Durst quality management system (QMS) is certified as per international quality management standard ISO 9001.

## CE certificate
All European machine manufacturers must make a self-declaration for their products with regard to product-safety compliance. Durst commissions the Pilz automation specialists with official certification. This guarantees a high standard of legal security and workplace safety for the owner and operator.

## GOTS
Durst has, for a second time, obtained coveted GOTS certification for the reactive ink system (Kappa Ink R). According to Greenpeace, the Global Organic Textile Standard (GOTS) is the most demanding seal of approval for the entire textile production chain. The seal is only awarded to textiles which are produced using at least 70% controlled organically grown natural fibers. All of the chemicals used, including dyes and auxiliary materials, must fulfill the specified criteria regarding ecology and toxicology.

## Green Label
In 2010, the Italian Association of Textile Machine Manufacturers (ACIMIT) introduced its „Green Label" certification program for sustainable technologies. The „Green Label" indicates the energy requirement, water and chemical consumption, $CO_2$ footprint and production efficiency of textile printing machines. One of the first digital textile printing machines to be certified, the Durst Kappa 180 achieves 95% better production efficiency using inkjet technology in comparison to traditional printing methods and also features an absolutely positive environmental balance.

GLOBAL ORGANIC TEXTILE STANDARD · GOTS ·

certified by
Control Union Certifications
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# Technical Data

| | Kappa 180 | Kappa 320 |
|---|---|---|
| Printing width and material thickness: | Max. printing width: 1,950 mm, max. material thickness: 8 mm | Max. printing width: 3,300 mm, max. material thickness: 8 mm |
| Material feed options: | • Integrated fabric intake for roll diameters up to 400 mm<br>• Axis unwinder for large rolls<br>• Feed unit for folded textiles | • Integrated material entry for roll diameters up to 400 mm<br>• Axis unwinder for large rolls and material feed system for optimum advancement and tension monitoring<br>• Feed unit for folded textiles |
| Printing blanket: | With permanent adhesive and integrated washing system | • With permanent adhesive and integrated washing system<br>• Optional: Heating roller and magnetic roller for easy adhesive application |
| Dryer: | • Vertical dryer: Thermal air dryer of up to 130 °C, with steam or electricity<br>• Horizontal dryer: Thermal air dryer of up to 130 °C and 1–3 passages; either with gas or electricity | Horizontal dryer with 3 passages:<br>Thermal air dryer of up to 130 °C; with either gas, steam or electricity |
| Material discharge options: | • Re-roller for roll diameters up to 400 mm<br>• Discharge unit for folded textiles | • Re-roller for roll diameters up to 400 mm<br>• Axis winder for large rolls and material discharge unit<br>• Discharge unit for folded textiles |
| Print heads: | 32 Durst QuadroZ print heads, 8 colors (4 print heads per color) arranged symmetrically (mirrored) on the print heads and featuring 49,152 nozzles | 32 Durst QuadroZ print heads, 8 colors (4 print heads per color) arranged symmetrically (mirrored) on the print heads and featuring 49,152 nozzles |
| Printing mode: | Binary (7 pl) and variable droplet size with 7/14/21 pictoliters | Binary (7 pl) and variable droplet size with 7/14/21 pictoliters |
| Resolution: | Standard 800 x 600 dpi, up to 1,000 x 1,200 dpi | Standard 800 x 600 dpi, up to 1,000 x 1,200 dpi |
| Print speed: | • Maximum speed: 800 x 600 dpi, 580 m²/h<br>• High-quality production: 1,000 x 1,200 dpi, 275 m²/h | • Maximum single pass speed:<br>800 x 600 dpi, 890 m²/h<br>• High-quality production: 1,000 x 1,200 dpi, 370 m²/h |
| RIP: | • Durst Kappa Wasatch RIP Edition + ColorBlend<br>• Durst Kappa Caldera GrandTex+ | • Durst Kappa Wasatch RIP Edition + ColorBlend<br>• Optional Durst Kappa Caldera GrandTex |
| Functions: | • DASC – Durst Advanced Stroke Control<br>• DARD – Durst Advanced Remote Diagnostics<br>• ONC – Online Nozzle Control<br>• Durst CostView – Production reporting and cost control | • DASC – Durst Advanced Stroke Control<br>• DARD – Durst Advanced Remote Diagnostics<br>• ONC – Online Nozzle Control<br>• Durst CostView – Production reporting and cost control |
| Ink tanks: | 18 liters per color | 18 liters per color |
| Ink system: | 8 freely fillable channels with integrated degassing and filter system | 8 freely fillable channels with integrated degassing and filter system |
| Ink types and colors: | • Reactive: CMYK, light magenta, red, orange, blue, gray<br>• Dispersion: CMYK, red, orange, blue, gray<br>• Acids: CMYK, red, orange, blue, gray, light magenta, fluorescent yellow, fluorescent pink | • Reactive: CMYK, light magenta, red, orange, blue, gray<br>• Dispersion: CMYK, red, orange, blue, gray<br>• Acids: CMYK, red, orange, blue, gray, light magenta, fluorescent yellow, fluorescent pink |
| Dimensions: | Feed + printer + drier + discharge (values depend on configuration) Length: 11,000 mm; Height: 2,500 mm; Width: 7,700 mm | Feed + printer + drier + discharge (values depend on configuration) Length: 15,000 mm; Height: 2,700 mm; Width: 11,000 mm |
| Production parameters: | 20-25 °C, relative humidity: 45%-60% (non-condensing) | 20-25 °C, relative humidity: 45%-60% (non-condensing) |

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