HP Latex Printing Technologies

HP Latex Inks are pigmented, water-based inks designed for commercial and industrial printing applications. Used in the HP Designjet L25500 and L65500 Printers, they are ideal for wide and super-wide applications, including event banners, transit signage, and other outdoor applications as well as high-quality indoor signage. HP Latex Inks produce vivid, durable prints and are compatible with most low-cost, eco-solvent/low-solvent compatible media in addition to a variety of uncoated media.

HP Latex Inks use HP's innovative aqueous-dispersed polymer ("Latex") technology to provide print durability and display permanence comparable to eco-solvent inks[1] and low-solvent inks[2] and their water-based formulation reduces the impact of printing on the environment and enables an improved printing environment.

From durable outdoor signage to odorless indoor displays[3], HP Latex Inks provide broad media versatility across both coated and uncoated media while enabling high-speed, high-productivity printing. And the HP large-format media portfolio[4] developed and tested with HP Latex Inks includes seven (7) recyclable substrates and five (5) that are covered by the HP Large-format Media take-back program.[5]

HP Designjet L25500 and L65500 Printers use internal radiant heaters and forced airflow to cure HP Latex Inks and produce dry prints inside the printer. Job production is streamlined and overall productivity is improved because prints are dry out of the printer and ready to display, finish, or prepare for shipment. There is no interruption in workflow by waiting for prints to dry, and additional floor space and production steps are not required for passing prints through an external print dryer or for air-drying prints. Prints can be laminated immediately using cold, hot, or liquid processes.[6]

HP Surface Treatment Technology allows both HP Latex Inks and HP low-solvent inks to produce durable prints with sharp, vivid image quality on recyclable, HDPE-based materials[7] that typically do not provide good results with aqueous and solvent inks.

HP Latex Inks were developed with HP Thermal Inkjet printheads in six-color[8] writing systems that provide high quality at high productivity without requiring daily manual maintenance or service calls for printhead replacement.

- Printheads in the HP Designjet L25500 and L65500 Printers are user-replaceable with a simple snap-out/snap-in process that eliminates the need for tools, handling ink tubes, and the time and expense of a service call.
- The HP Designjet L25500 Printer uses three pairs of HP 789 Designjet Printheads in HP Double Swath Technology to print a 1.7-inch (43-mm) swath.[9] The HP Designjet L25500 Printer can produce up to 246ft^2/hr (22.8 m^2/hr) in 4-pass bi-directional (bi-di) mode, up to 97ft^2/hr (9.0 m^2/hr) in 10-pass bi-di mode, and up to 81 ft^2/hr (7.6 m^2/hr) in 12-pass bi-di mode.[10]

---

[1] For the HP Designjet L25500 Printer, HP image permanence and scratch, smudge, and water resistance estimates by HP Image Permanence Lab. Outdoor display permanence tested according to SAE J2527 using HP Latex and eco-solvent ink on a range of media, including HP media; in a vertical display orientation in simulated nominal outdoor display conditions for select high and low climates, including exposure to direct sunlight and water; performance may vary as environmental conditions change. Scratch, smudge, and water resistance tested using HP Latex and eco-solvent inks on a wide range of media, including HP media; water resistance is comparable when printed on water-resistant substrates. Laminated display permanence using GBC clear gloss 1.7 mil hot laminate. Results may vary based on specific media performance and scratch testing methodology. For more information, see www.hp.com/go/supplies/printpermanence.

[2] For the HP Designjet L65500 Printer, HP image permanence and scratch, smudge, and water resistance estimates by HP Image Permanence Lab. Display permanence tested according to SAE J2527 using HP Latex and low-solvent inks on a range of media, including HP media; in a vertical display orientation in simulated nominal outdoor display conditions for select high and low climates, including exposure to direct sunlight and water; performance may vary as environmental conditions change. Scratch, smudge, and water resistance tested using HP Latex and low-solvent inks on a wide range of HP media; water resistance is comparable when printed on water-resistant substrates. Laminated display permanence using Neschen Solvoprint Performance Clear 80 laminate. Results may vary based on specific media performance. For more information, see www.hp.com/go/supplies/printpermanence.

[3] Printers using HP Latex Inks use internal heaters to dry and cure the latex polymer film. Some substrates may have inherent odor.

[4] Visit www.hp.com/go/designjet/supplies for a description of HP large-format printing materials including availability in roll widths and lengths.

[5] HP offers the HP Large-format Media take-back program in the U.S. and Europe, through which most HP recyclable signage media can be returned, availability varies. Some recyclable papers can be recycled through commonly available recycling programs. For details visit www.hp.com/go/recycle. Aside from this program, recycling opportunities for these products are currently only available in limited areas. Customers should consult local recycling resources for recycling these products.

[6] Lamination compatibility is highly dependent on the printing material. HP recommends testing lamination performance prior to any important job.

[7] High Density Polyethylene (HDPE) materials include HP HDPE Reinforced Banner and HP DuPont™ Tyvek® Banner. Recycling opportunities are currently available only in limited areas. Customers should consult their local recycling resources.

[8] Ink colors include cyan, light cyan, magenta, light magenta, yellow, and black.

[9] For more information, see the TechNotable on the HP Designjet L25500 Printer at www.hp.com/go/hp_latex_printing_technologies

[10] Printed in a 60-in printer, full width plot (60x60in), using HP Permanent Gloss Adhesive Vinyl. Printer used Onyx RIP 7.3.

- The HP Designjet L65500 Printer uses three HP 786 Designjet Printheads in HP Wide Scan Printing Technology for an 8.5-inch (216-mm) print swath.[11] The HP Designjet L65500 Printer in outdoor quality mode[12] produces up to 846 ft^2/hr (79 m^2/hr), and in indoor-quality mode[13] up to 368 ft^2/hr (34 m^2/hr).
- The printers feature a built-in automatic printhead service station and automatic nozzle testing systems that eliminate the need for daily manual maintenance, and maintain print quality by substituting good nozzles for those found to perform outside of specifications.
- Used HP 786 and HP 789 Designjet Printheads, as well as HP 789 Latex Designjet Ink Cartridges may be returned through the HP Planet Partners program for free and convenient recycling.[14]

HP's proprietary Optical Media Advance Sensor[11] (OMAS) provides accurate media advance over the longer print swaths used in the HP Designjet L25500 and L65500 Printers. Because OMAS provides direct measurement of media motion, it is not affected by mechanical tolerances in the media drive system and changes in media thickness, stiffness, and coefficient of friction. This means consistent quality in images, area fills, and graphics over a wide range of temperature and humidity conditions, and dependable performance over the life of the printer in production printing environments. OMAS works on the full HP media portfolio for HP Designjet L25500 and L65500 printers.[15]

Ink Composition

HP Latex Inks are water-based and offer important advantages over eco-solvent/low-solvent inks used in commercial and industrial inkjet printing. No special workplace ventilation is required[16] to use the HP Designjet L25500 and L65500 Printers. HP Latex Inks create an improved printing environment because they do not require special handling, contain no materials requiring hazard warning labels, and are non-flammable and non-combustible.[17] In the European Union (EU)—widely recognized as having the most comprehensive set of labeling guidelines in the world—HP Latex Inks do not require hazard warning labels in accordance with EU Directive 1999/45/EC. HP Latex Inks do not produce ozone emissions during printing and contain no HAPs (hazardous air pollutants)[18] or sensitizers and comply with Nordic Swan criteria, version 4.2.

HP Latex Inks consist of a liquid ink vehicle that carries latex polymer and pigment particles to the surface of the print media. Physical and chemical properties of the ink vehicle are critical both for drop ejection performance and control of ink-media interactions. These properties are obtained by formulating the ink vehicle with a combination of water (up to 66%), co-solvents for aqueous inks (less than 30%), and additives. Co-solvents are water-soluble organic liquids.[16]

High water content gives HP Latex Inks the high surface tension and low viscosity that are ideal for use in HP Thermal Inkjet printheads. As the major component of HP Latex Inks, water offers important benefits to commercial and industrial production environments: water produces no VOCs, requires no special handling, and is non-toxic, non-flammable, and non-combustible.

Water alone is not a practical ink vehicle for printing on the wide variety of media used in commercial and industrial applications: co-solvents and additives must be added to obtain the required performance

[11] For more information, see the TechNotable on HP Wide Scan Printing Technology at www.hp.com/go/hp_latex_printing_technologies
[12] 2-pass, full-width (2.64 m/104 in.) unidirectional print mode.
[13] 5-pass, full-width (2.64 m/104 in.) unidirectional print mode. 5-pass print mode is only available on self-adhesive vinyl substrates.
[14] In the circa 45 countries and territories in which the HP Planet Partners program operates. Program features and availability varies. Where this program is not available, and for other consumables not included in the program, consult the Material Safety Data Sheet (MSDS) available at www.hp.com/go/ecodata to determine appropriate disposal.
[15] See the User Guide for details. HP Backlit Film does not use the HP Optical Media Advance Sensor.
[16] Special ventilation is not required to meet US OSHA requirements on occupational exposure to VOCs from HP Latex Inks. Special ventilation equipment installation is at the discretion of the customer—no specific HP recommendation is intended. Customers should consult state and local requirements and regulations.
[17] HP water-based Latex Inks are not classified as flammable or combustible liquids under the USDOT or international transportation regulations. These materials have been tested per the Pensky-Martins Closed Cup Method and the flash point is greater than 110 deg C.
[18] No ozone products expected based on ink composition and printing technology. The inks were tested for Hazardous Air Pollutants per U.S. Environmental Protection Agency Method 311 (testing conducted in 2008) and none were detected. HAPs are air pollutants which are not covered by ambient air quality standards but which, as defined in the Clean Air Act, may present a threat of adverse human health effects or adverse environmental effects.

characteristics. The co-solvents in HP Latex Inks are similar in type and concentration to co-solvents used in HP's water-based Designjet inks, which are used in office-like environments.

Co-solvents and additives play an important role in drop ejection and ink-media interactions. They lower surface tension to wet the internal surfaces of the drop generators to keep them primed with ink and ready to print. They keep the surface of the thermal inkjet heater resistor and orifice plate clean for consistent drop ejection performance, minimize viscous plugs in the nozzles that can cause missing or misdirected drops, and affect how the ink droplet wets the surface of the print media to control dot formation. Co-solvents soften uncoated vinyl for better adhesion to the latex polymer film, and they evaporate in the printer to produce a completely dry and odorless[19] print that can be immediately handled, finished, shipped, or displayed indoors.

A key innovation in HP Latex Inks is the incorporation of latex polymer particles. "Latex" is a term that describes a stable, aqueous dispersion of microscopic polymer particles. It is important not to confuse the polymers used in HP Latex Inks with those found in natural materials, such as latex rubber. While some individuals experience skin irritation from contact with natural latex compounds, the synthetic polymers used in HP Latex Inks are non-allergenic.

Inside the HP Designjet L25500 and L65500 Printers, a liquid film of HP Latex Ink on the print media is exposed to radiant heaters and airflow in the Print Zone and Curing Zone. No connection to special ventilation equipment,[16] such as a vapor extraction or air purification system, is required. This process evaporates the ink vehicle and causes the latex polymer particles to coalesce forming a continuous polymer layer that adheres to print media and encapsulates the pigment to form a durable colorant film.

Some inkjet printers use in-line high-speed dryers or off-line print storage to evaporate ink solvents from the print before finishing, shipment, or display. Drying prints helps to minimize the release of objectionable solvent odors at the point of display. But, completely drying solvent-ink prints in the print shop releases additional VOCs into the work area, and this process may require special ventilation to meet occupational exposure requirements.

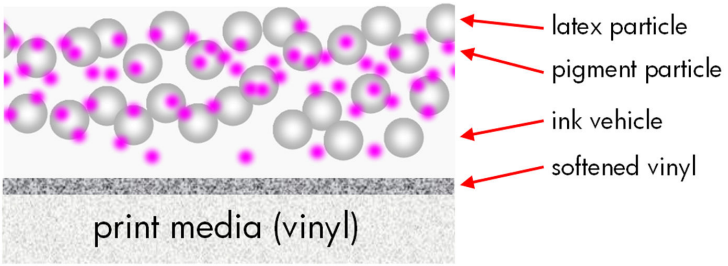
Image Formation Process

The image formation process for HP Latex Inks in the HP Designjet L25500 and L65500 Printers is described in more detail in Figures 1 through 3.

Figure 1 shows a schematic drawing (not to scale) of a liquid film of HP Latex Ink in the Print Zone on the surface of nonabsorbent media, such as uncoated vinyl. The Print Zone is the region of the printer platen where ink drops are jetted onto the print media, and it is located immediately under the scanning printheads. The liquid film is created from an ink droplet after co-solvents and additives in the ink vehicle aid in wetting the surface to allow the drop to spread. The layer is composed of a mixture of ink vehicle, latex polymer particles, and pigment particles.

In Figure 2, radiant heaters and forced air in the Print Zone and Curing Zone evaporate the ink vehicle and cure the latex film. These heating elements are designed to last for the life of the printer.

Figure 1. Liquid Film of HP Latex Ink on the Surface of Print Media – Before Drying and Curing Processes (Schematic representation not to scale)

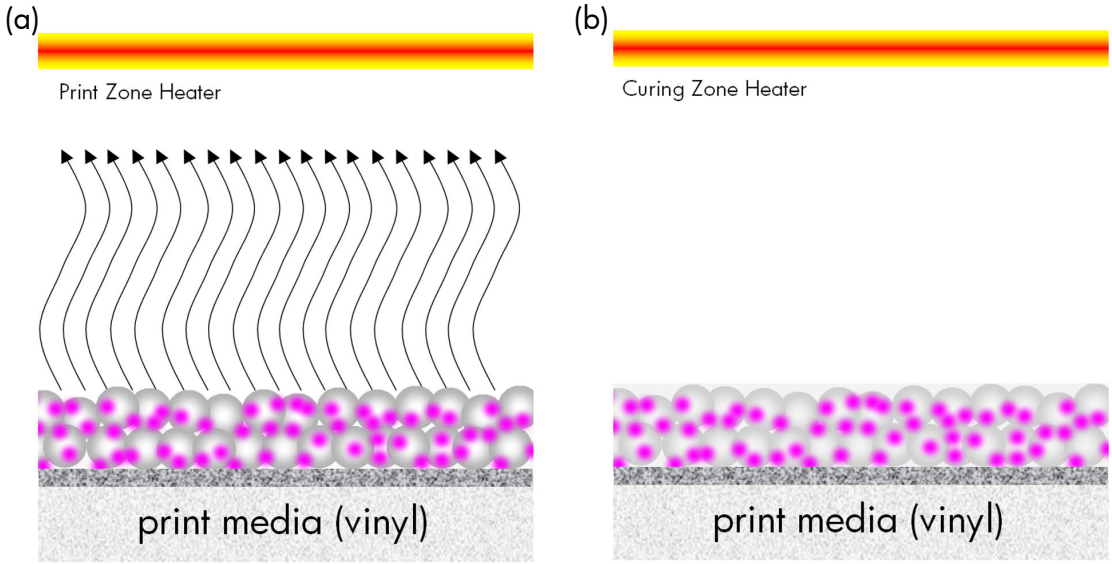


[19] Printers using HP Latex Inks use internal heaters to dry and cure the latex polymer film. Some substrates may have an inherent odor.

Figure 2a shows the effect of the Print Zone Heater. In the Print Zone, radiant heat and forced airflow evaporates most of the water and the liquid film condenses to a viscous mixture of co-solvents, latex polymer particles, and pigment particles. The co-solvents have been concentrated, and now begin to soften the vinyl surface to prepare it for chemical interaction with the latex polymers.[20] High viscosity in the ink film now immobilizes the polymers and colorant to set the dot size and to minimize coalescence and bleed with dots in neighboring print locations.

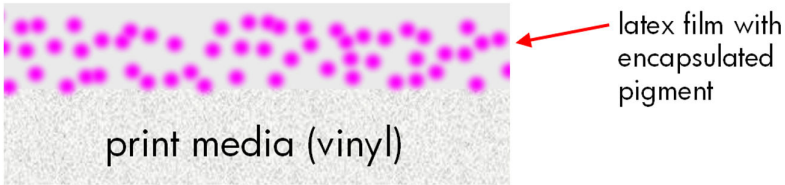
In Figure 2b, the printed media has been advanced out of the Print Zone into the Curing Zone. Here, a second dryer evaporates the co-solvents. The latex polymer particles now coalesce into a continuous polymer film that encapsulates the pigments. This process of film formation is called "curing", and it occurs during and after the co-solvents evaporate ("drying"). The dense film of latex particles now chemically bonds to the softened vinyl surface.

Figure 2. HP Latex Ink Curing Process: (a) Print Zone Heating; (b) Curing Zone Heating



In Figure 3, a continuous latex film encapsulating the pigments has formed on the vinyl surface as the print leaves the Curing Zone. No additional drying of the print is needed because virtually all of the ink vehicle has evaporated. An external print dryer is not needed, and production workflow is improved because prints come out of the printer ready to use, finish (e.g., trim, weld, or laminate), or prepare for shipment.

Figure 3. Cured Film of HP Latex Ink



[20] This chemical interaction occurs between the surface (molecules) of the media and so-called functional groups (of atoms) placed on the outside of the latex polymer chain during the production of these polymers. These functional groups give the latex polymer some of its chemical properties, for example the ability to bond to other materials such as polyvinyl chloride (vinyl).

Performance

Durability and display permanence are two important characteristics for prints produced for commercial and industrial applications. Durability is characterized by a print's scratch-, smudge-, and water-resistance. Display permanence is a measure of how long prints will last on outdoor and indoor display.

HP Latex Inks in the HP Designjet L25500 and L65500 Printers produce durable, high-quality output on a range of media, and achieve outdoor display permanence up to 3 years unlaminated and up to 5 years laminated.[1,2]

For prints produced on the HP Designjet L25500, HP Latex Inks offer display permanence and scratch, smudge, and water resistance (on water-resistant media) comparable to eco-solvent inks.[1]

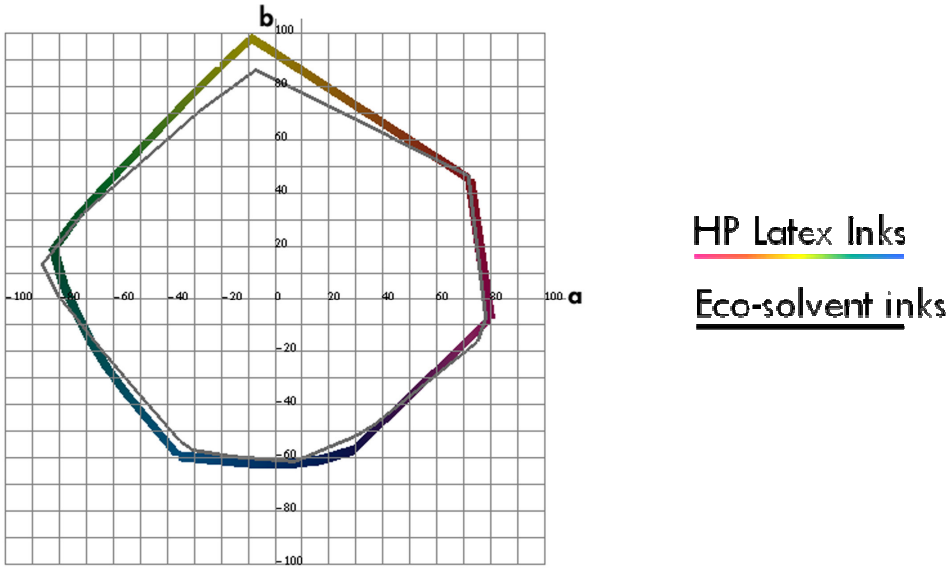
For prints produced on the HP Designjet L65500, HP Latex Inks offer display permanence and scratch, smudge, and water resistance (on water-resistant media) comparable to low-solvent inks.[2] Prints for indoor, in-window display on a range of media last up to 5 years unlaminated and up to 10 years with lamination.[21]

Dry, ready-to-use prints made on vinyl with the HP Designjet L25500 and L65500 Printers and HP Latex Inks can be laminated immediately using cold, hot, and liquid lamination methods.[22] Prints made with HP Latex Inks may be welded together to make panels using methods appropriate to the particular substrate (e.g., vinyl).

When used in a 6-color printing system including cyan, light cyan, magenta, light magenta, yellow, and black inks, HP Latex Inks in the HP Designjet L25500 Printer produce a color gamut on Avery MPI 3000 vinyl as seen by the colored line in Figure 4 [23]. The gamut from a Roland SolJet Pro III printer using eco-solvent (ECO-SOL MAX) inks is shown in gray for comparison. The gamuts are projected onto the a-b plane of the CIELab color space.

The gamut volume for the HP Designjet L25500 Printer using HP Latex Inks on Avery MPI 3000 vinyl was computed to be 608,514 cubic CIELab units, about 1% larger than the gamut for the Roland SolJet Pro III printer using ECO-SOL MAX inks.

Figure 4. CIELab Color Gamuts on Avery MPI 3000 vinyl, a-b plane. 6-color printing systems.
HP Designjet L25500 Printer using HP Latex Inks, Roland SolJet Pro III printer using eco-solvent (ECO-SOL MAX) inks.



[21] Interior in-window display ratings by HP Image Permanence Lab on a range of media including HP media. HP in-window predictions based on test data under Xenon-Arc illuminant. Calculation assumes 6000 Lux/12 hr day. Laminated display permanence using GBC clear gloss 1.7 mil hot laminate. For more information, visit www.hp.com/go/supplies/printpermanence

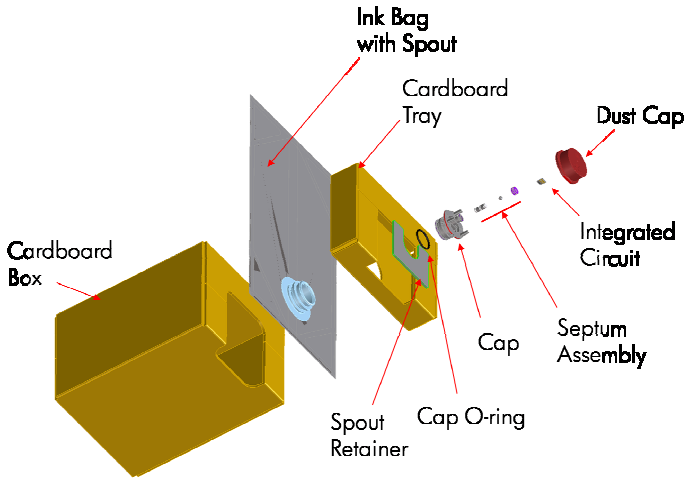
[22] Lamination compatibility is highly dependent on the printing material. HP recommends testing lamination performance prior to any important job.

[23] Based on HP Imaging and Color Lab color gamut measurements. The Designjet L25500 Printer used a Colorgate RIP.

HP Latex Designjet Ink Cartridges

HP developed the HP 786 Latex Designjet Ink Cartridge with an innovative design for use in the HP L65500 Printer. Its construction reduces material use and includes a recyclable cardboard container accounting for approximately 70 percent of the weight of the used ink cartridge.[24] An internal cardboard component (Tray) is also made of recyclable cardboard. This cartridge supplies 3-liters of ink. It is shown schematically with its internal components in Figure 5.

Figure 5. HP 786 Latex Designjet Ink Cartridge – Exploded View Showing Internal Components



A collapsible Ink Bag inside the box contains the ink and provides vapor and air barriers to minimize changes in ink composition during shipping, storage, and use. A Cap with a Septum Assembly is attached to the Spout on the Ink Bag. The septum is a valve that opens when the ink cartridge is connected to the printer's ink delivery system. A Dust Cap keeps the septum clean during shipping and storage.

An Integrated Circuit makes electrical contacts with the printer when the ink cartridge is installed. Bi-directional communication with the printer provides information about the status of the ink cartridge including type of ink, ink color, and remaining ink quantity. It also identifies the cartridge to the printer as an Original HP ink cartridge.

The ink cartridge features high ink utilization: as ink is extracted, the ink bag is designed to collapse in a way that maximizes the amount of usable ink that can be delivered.

Used in the HP Designjet L25500 Printer, HP 789 Latex Designjet Ink Cartridges are similar in design to cartridges used in the HP Designjet Z2100, Z3200, and Z6100 Printers. Ink is contained in a metalized plastic bag within a plastic shell, and each ink cartridge supplies 775-ml of HP Latex Ink. These high-volume ink cartridges offer a low intervention rate and allow unattended and overnight printing with the HP Designjet L25500 Printer. Used HP 789 Latex Designjet Ink Cartridges may be returned through the HP Planet Partners program for free and convenient recycling.[14]

HP 789 Latex Designjet Ink Cartridges are color-coded for each ink color and use a mechanical key that prevents inserting a cartridge into the wrong slot. An integrated circuit on each cartridge identifies the cartridge as an Original HP ink cartridge to the printer, reports ink manufacturing date for reliability and image quality, and keeps track of ink quantity remaining. Partially-used cartridges can be removed and replaced with full ones for overnight, unattended printing, then reinstalled later to use the remaining ink.[25]

[24] Consult with your local authority to determine the appropriate method of waste disposal for the ink bag.
[25] HP recommends storing partially-used cartridges in the same orientation as they sit in the printer.

HP Large-format Printing Materials for HP Latex Inks

HP Latex Printing Technologies meet the needs of a broad range of applications requiring high-quality, flexible, outdoor and indoor displays. These include POP posters, exhibition/event graphics, light boxes, outdoor and event banners, vehicle wraps and fleet marketing, wall murals, and prints made on non-stretchable polyester fabrics.

HP Latex Inks achieve the optimum in high-quality and consistent performance on HP large-format printing materials, which have been designed and tested together with HP Latex Inks. HP's portfolio of 20 large-format printing materials for the HP Designjet L25500 and L65500 Printers include both outdoor and indoor substrates and ranges from low-cost, uncoated media to a selection of banner, self-adhesive, film, fabric, paper, mesh, and specialty options:

Banners HP Durable Frontlit Scrim Banner HP Outdoor Frontlit Scrim Banner HP Backlit Scrim Banner HP HDPE Reinforced Banner	**Self-adhesives** HP Permanent Gloss Adhesive Vinyl HP Permanent Matte Adhesive Vinyl HP One-view Perforated Adhesive Window Vinyl HP Air Release Adhesive Gloss Cast Vinyl HP PVC-free Gloss Adhesive Film	**Films** HP Premium Backlit Film **Mesh** HP Mesh Banner with Liner
Fabric HP Wrinkle-free Flag with Liner HP Heavy Textile Banner HP Light Textile Display Banner	**Paper** HP Blue Back Billboard Paper HP Photo-realistic Poster Paper HP White Satin Poster Paper HP PVC-free Wall Paper	**Specialty** HP Satin Canvas HP DuPont™ Tyvek® Banner

HP large-format printing materials designed specifically for HP Latex Printing Technologies include seven (7) recyclable[5] substrates: HP HDPE Reinforced Banner, HP DuPont™ Tyvek® Banner, HP Heavy Textile Banner, HP Light Textile Display Banner, and HP Wrinkle-free Flag with liner—all of which can be returned through the HP Large-format Media take-back program for large-format printing materials.[5] HP Photo-realistic Poster Paper and HP White Satin Poster Paper can be recycled with cardboard. For more information about the HP Large-format Media take-back program, see www.hp.com/recycle.

Many third-party media companies, including 3M, Avery Dennison, Neschen, Ultraflex, Verseidag, and others are working with HP to validate their range of products with HP Latex Inks and the HP Designjet L25500 and L65500 Printers. Full details of media types tested and their suppliers can be found on HP Designjet Solution web pages at www.hp.com/go/L25500/solutions and www.hp.com/go/L65500/solutions.

HP Surface Treatment Technology

High Density Polyethylene (HDPE) fibers are used in the production of Tyvek®. HDPE has many desirable physical properties: it has high tensile strength and is lightweight, it is durable outdoors, and it is recyclable[18]. HDPE is also resistant to many solvents, and this feature gives HDPE widespread use in packaging for food and chemicals. But, it is this solvent-resistance that poses an issue for image quality and print durability. When printing HDPE materials with aqueous and low-solvent inks,[26] the ink vehicle cannot soften or dissolve the surface. Therefore, no interface layer forms between the substrate and the colorant layer to give good adhesion and print durability.

Tyvek® is formed from HDPE fibers fused together under heat and pressure. The surface of a Tyvek® sheet is a matrix of randomly-oriented fibers with large, open pores. Pigments can be carried deep into the fiber matrix when ink penetrates the surface of untreated Tyvek®. When this happens, a print may have high color bleed and feathering, low edge sharpness, low color saturation, reduced color gamut, and low optical density.

To improve imaging characteristics of HDPE, HP developed a polymer-based, proprietary surface treatment technology for HDPE-based materials. This surface treatment offers both sharp, vivid image quality and print durability when using either HP Latex Inks or HP low-solvent inks.

[26] Low-solvent inks are HP 781 and HP 791 Inks used in HP Designjet 8000sr, 9000s, and 10000s Printers.

On HDPE materials processed with HP Surface Treatment Technology, HP Latex Inks and HP low-solvent inks wet and dissolve the polymers to leave an integrated colorant film after the ink vehicle evaporates. Pigments are encapsulated into the polymers to achieve improved image durability, color saturation and color gamut, and edge sharpness.

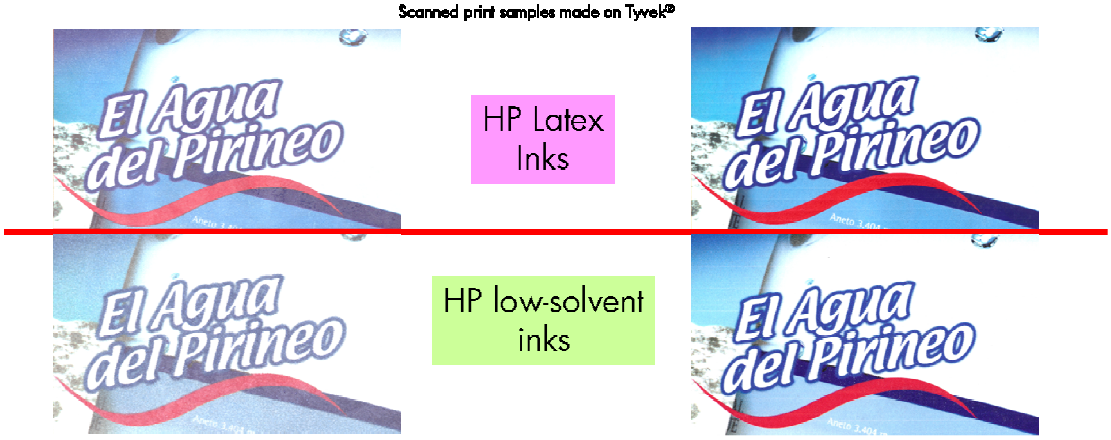
Figure 6 shows scanned images of HP DuPont™ Tyvek® Banner samples with and without HP Surface Treatment Technology. Samples were printed with HP Latex Inks and HP low-solvent inks and scanned.

On the left, untreated Tyvek® is shown printed with both types of ink. The prints have low color saturation and low optical density.

The print samples on the right are made on HP DuPont™ Tyvek® Banner with HP Surface Treatment Technology. Colors are seen to be vivid and saturated with much higher optical density.

HP Surface Treatment Technology is currently available on HP HPDE Reinforced Banner and HP DuPont™ Tyvek® Banner print media.

Figure 6. HP Latex Inks and HP low-solvent inks on HP DuPont™ Tyvek® Banner:
Untreated (left) and Treated with HP Surface Treatment Technology (right)



HP Latex Inks use a water-based ink vehicle and HP's innovative aqueous-dispersed polymer ("Latex") technology to deliver durability, permanence, and color imaging performance comparable to eco-solvent inks[1] (HP Designjet L25500 Printer) and HP low-solvent inks[2] (HP Designjet L65500 Printer). HP Latex Inks were designed together with HP Thermal Inkjet writing systems to deliver reliable performance, high image quality, and provide automatic printhead maintenance with no manual daily cleaning. The water-based formulation of HP Latex Inks enables an improved printing environment and recycling opportunities exist for certain used consumables and HP Large-format Media.[14]

For more information

To learn more about HP Latex Printing Technologies,
visit www.hp.com/go/hp_latex_printing_technologies

For more information about the HP Large-format Media take-back program,
visit www.hp.com/recycle

For more information about HP Designjet Solutions,
visit www.hp.com/go/L25500/solutions and www.hp.com/go/L65500/solutions

July 2009

invent