Technical white paper

HP 832 and 873 Latex Inks: designed for sustainable impact

HP's water-based Latex Inks offer many advantages across the entire product lifecycle in comparison to eco-solvent, solvent, UV-curable, and UV-gel inks

Introduction

The fourth-generation HP Latex Ink brings more innovation than previous generations, driving greater sustainable impact. The result is HP Latex L700 and L800 printer systems meet many toy safety standards[1], UL ECOLOGO certification[2], and many other health and environmental achievements, which are described below. HP Latex provides outdoor durability and versatility across all common media types used in sign and display applications, while newly expanding into white ink applications, to produce high-quality odorless prints[3].

Health and environmental performance

HP Latex Printing Technology address health and environmental concerns across a broad range of attributes throughout the entire lifecycle of a print: from production to disposal. The HP 832 and 873 inks do not require any hazard labels in comparison to most eco-solvent, solvent, UV, and UV-gel technologies, which might have several. Additionally, the water-based formulation of HP Latex Inks provides a more comfortable and welcoming print production environment without trading off performance. HP Latex Inks also allow print service providers to produce odorless[3] prints for indoor display in sensitive environments such as hospitals and schools.

These HP Latex Inks contain up to 65% water and have a flashpoint greater than 110 °C, making them non-combustible and non-flammable[4]. In contrast, eco-solvent and solvent-based inks typically have highly volatile components in high concentrations with flashpoints around 60°C to 70 °C, and may require in some countries, special transportation, handling, and storage.

No special ventilation is required with HP Latex Inks[5] and they contain no Hazardous Air Pollutants (HAPs)[6]. Printing with HP Latex inks avoid the problematic reactive monomer chemistry[7] and ozone generation associated with UV printing.

As with most cyan inks, the HP Latex cyan ink utilizes a copper-based dye that is present in a bound form as copper phthalocyanine. There are no other heavy metals present as intentionally added ingredients in these HP Latex inks[8] and the inks are PVC-free. While it is the obligation of the toy manufacturer to adequately certify the toy for specific uses, HP Latex inks have demonstrated compliance to toy directives in Canada, Europe, and the United States, which screen for problematic heavy metals, amines, and colorants[1]. Finally, HP Latex Ink is not classified as an eye irritant, and the latex polymer in HP Latex inks is not related to natural or synthetic latex, so it does not cause a latex-related allergic reaction.

Certifications

The UL ECOLOGO Certified HP Latex inks meet a range of stringent environmental performance standards and human health criteria. HP was the first printing company to have UL ECOLOGO certified inks[2]. They also demonstrate rigorous and comprehensive standards for low chemical emissions in indoor air for the finished print, such as UL GREENGUARD GOLD. HP Latex Inks are UL GREENGUARD GOLD certified at the lowest emissions, qualified for unrestricted use to wallpaper a full

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[1] Fourth-generation HP Latex Inks have been tested and demonstrated compliance to the following toy safety methods and protocols: EN 71-3, EN 71-9, ASTM F963-17, US 16 CFR 1303, US 16 CFR 1307, SOR 2011-17, and SOR 2018-83. HP does not recommend using the inks for toys intended to target children under the age of 3 years.

[2] UL ECOLOGO® Certification to UL 2801 demonstrates that an ink meets a range of stringent criteria related to human health and environmental considerations (see ul.com/EL).

[3] Based on sensory evaluations conducted by Odournet done according to VDI Guideline 3882 where 832 and 873 inks were characterized as "weak" in odor intensity and "neutral" for hedonic tone.

[4] Water-based HP Latex Inks are not classified as flammable or combustible liquids under the USDOT or international transportation regulations. Testing per the Pensky-Martens Closed Cup method demonstrated flash point greater than 110° C (230° F).

[5] Special ventilation equipment (air filtration) is not required to meet U.S. OSHA requirements. Some models include a condensate collection system. Special ventilation equipment installation is at the discretion of the customer—see the Site Preparation Guide for details. Customers should consult state and local requirements and regulations.

[6] HP Latex Inks were tested for Hazardous Air Pollutants, as defined in the Clean Air Act, per U.S. Environmental Protection Agency Method 311 (testing conducted in 2013) and none were detected.

[7] Acrylate monomers present in uncured UV inks and UV-gel inks can damage skin.

[8] Arsenic, antimony, soluble barium, cadmium, chromium, cobalt, mercury, lead, nickel, and selenium are not present as intentionally added components and were not detected in toy testing. However, according to ICP-MS results, the following may be present in the raw ink as contaminants: Arsenic <0.1 ppm, Chromium <0.2 ppm, Nickel <0.2 ppm.

room. Also, no wait time is necessary before installation (or prior to applications with lamination).[9] In addition, prints produced using HP Latex Inks on HP PVC-free Wallpaper meet AgBB criteria for health-related evaluation of VOC emissions of indoor building products.[10] These prints are rated A+ (very low-emission) according to the *Émissions dans l'air intérieur* statement on the level of volatile substances in indoor air.[11]

HP large format printing materials portfolio includes a wide range of FSC®-certified papers[12], as well as HP PVC-free Wallpaper and HP PVC-free Durable Smooth Wallpaper.[13] HP Latex inks printed on HP PVC-free Durable Smooth Wallpaper qualify for LEED credits in the low emitting category and meet the limits for formaldehyde release in EN 15102 for wall coverings[14]. Use the HP Media Locator to easily identify these and over 50 other eco-conscious media[15] choices to use with the HP Latex print system. These media present an environmental benefit when compared to the typical media used for that application, such as PVC-free wall paper instead of a PVC-based one, or a media that offers a take-back program for proper end of life management.

HP Latex inks also conform to the Zero Discharge of Hazardous Chemicals (ZDHC) Roadmap to Zero Level 1 Manufacturing Restricted Substances List (MRSL) Version 1.1, a list of chemical substances banned from intentional use in order to help contribute to cleaner air and water during textile production.[16] Additionally, certain HP Latex printers meet the requirements of Electronic Product Environmental Assessment Tool (EPEAT)[17] which is a comprehensive environmental rating to help identify "greener" electronic components across the complete product lifecycle. The HP Latex L700 and L800 printer series meet EPEAT Silver Level as well as meet ENERGY STAR[18] certification for superior energy efficiency.

[9] GREENGUARD GOLD Certification to UL 2818 demonstrates that products are certified to GREENGUARD standards for low chemical emissions into indoor air during product usage. For more information, visit ul.com/gg or greenguard.org.
[10] HP WallArt printed on HP PVC-free Wallpaper and other prints on HP PVC-free Wallpaper printed with HP Latex Inks meet AgBB criteria for health-related evaluation of VOC emissions of indoor building products. See umweltbundesamt.de/sites/default/files/medien/355/dokumente/agbb_evaluation_scheme_2018.pdf
[11] Émissions dans l'air intérieur provides a statement on the level of emission of volatile substances in indoor air posing health risks if inhaled—on a scale from A+ (very low-emission) to C (high-emission). Wall decorations printed with HP Latex Inks and HP PVC-free Wallpaper are rated A+ according to Émissions dans l'air intérieur. See anses.fr/en/content/labelling-building-and-decoration-products-respect-voc-emissions
[12] Applicable to select HP large format printing materials. BMG trademark license code FSC®-C115319, see fsc.org. HP trademark license code FSC®-C017543, see fsc.org. Not all FSC®-certified products are available in all regions. For information about HP large format printing materials, please visit HPLFMedia.com.
[13] For HP PVC-free wall papers, chemical analysis demonstrated elemental chlorine to be at or below 200 ppm. Presence of chlorine is attributed to residual chlorine used in paper-making process, and not due to the presence of PVC.
[14] To obtain US LEED credits based on FSC® certification, the builder must purchase HP PVC-free Durable Smooth Wall Paper printed with HP Latex Inks from an FSC Chain of Custody certified print service provider. To obtain LEED credits based on UL GREENGUARD Gold Certification, HP PVC-free Durable Smooth Wall Paper printed with HP Latex Inks must be part of a wall system in which all components are UL GREENGUARD Gold Certified.
[15] HP applications experts have evaluated the catalog of media listed in the HP Media Locator based on internal criteria to identify those that provide alternative solutions with certain environmental benefits compared to the typical media within the same application type. The information in media locator is provided by the Media substrate Vendors. HP is not responsible for the veracity of the information from third-party companies published on HP website. See printos.com/ml/#/medialocator
[16] UL tested and certified HP Latex inks comply to ZDHC requirements. ZDHC is an organization dedicated to eliminating hazardous chemicals and implementing sustainable chemicals in the leather, textile, and synthetics sectors. The Roadmap to Zero Programme is a multi-stakeholder organization which includes brands, value chain affiliates, and associates, that work collaboratively to implement responsible chemical management practices. For more information, see roadmaptozero.com.
[17] Applicable to select HP Latex printers. EPEAT registered where applicable/supported. See www.epeat.net for registration status by country.
[18] Applicable to select HP Latex printers. ENERGY STAR and ENERGY STAR mark are registered trademarks owned by U.S Environmental Protection Agency. See energystar.gov for certification status by country

Recyclability

HP Latex L700 and L800 printer series are made of 20% recycled plastic from post-consumer electronic devices, closed loop, soda bottles, and UL Validated ocean-bound resins[19]. More than 96% of the materials used in the printer are recyclable by product weight following the Waste Electrical and Electronic Equipment (WEEE) Directive[20].

HP Latex L700 and L800 printer series utilize the Eco-Carton ink cartridge, which replaces plastic cartridges, with an 80% reduction in plastic, achieving 66% CO_2e reduction[21]. The HP Eco-Carton outer carton is 100% recyclable through local cardboard/paper programs. Inner materials including the ink bag are 55% recyclable and can be returned free of charge to the HP Planet Partners program for reprocessing of plastic parts with zero going to landfill. HP Latex printheads can also be returned. HP Planet Partners Program is offered free of charge in 68 countries and territories around the world. More than 875 million cartridges have been recycled through HP Planet Partners and is rated the #1 printer supplies recycling program.[22]

For prints and unprinted scrap materials, HP offers an HP Large Format Media take-back program in the U.S. and Europe through which many HP printed signage media can be returned[23]. HP printed material on paper-based products can go directly to locally available paper recycling programs. Or if printing on other material types, consult the media vendor for recyclability options.

Summary

Water-based HP Latex Inks are designed thinking on sustainable impact throughout the product lifecycle. HP Latex Inks meet a variety of stringent human health criteria represented by UL ECOLOGO, UL GREENGUARD GOLD and ZDHC. The ink cartridges comply with CE Mark, EU RoHS, EU REACH and other applicable world-wide chemical notification requirements[24]. Finally, the HP Ecosolutions Trained Printing Company Program[25] for HP Latex Printing Technology users provides convenient web-based training to help print service providers gain knowledge and provide value to the growing number of clients looking for graphics solutions with reduced environmental impact.

[19] The L700/800 printer total plastic weight uses 10 kg (22 lbs) or 20% recycled plastics recovered from post-consumer electronics, closed loop from HP Planet Partners, soda bottles, and UL Validated ocean bound resins. HP received the first recycled content validation for Ocean-Bound Plastics from UL under the UL 2809 Environmental Claim Validation Procedure, see ul.com/news/hp-receives-first-recycled-content-validation-ocean-bound-plastics-ul.

[20] HP Latex printers contain over 96% recyclable materials and less than 0.1% landfill by product weight according to criteria set by the European Community Directive 2012/19/EU on waste electrical and electronic equipment (WEEE).

[21] Applicable to HP 832 ink cartridges, CO_2e reduction based on moving from plastic ink cartridge to cardboard HP Eco-Carton ink cartridge, with annual manufacturing savings of 291 tons and transport savings of 8 tons. Equivalent to 1,194,028 km (741,935 miles) driven by an average passenger vehicle or over 38 million smartphones charged. See epa.gov/energy/greenhouse-gas-equivalencies-calculator).

[22] Visit hp.com/recycle to see how to participate and for HP Planet Partners program availability; program may not be available in your jurisdiction. Where this program is not available, and for other consumables not included in the program, consult your local waste authorities. on appropriate disposal. Compared to majority of competing in-class OEM ink & laser printer supply recycling programs. Criteria: size, reach, recycled content use, upcycling & eco award/ranking. HP-commissioned Aug 2020 InfoTrends research report. Market share: IDC Q2'20 Hardcopy Peripheral Tracker. Program availability varies. See hp.com/go/recycle & keypointintelligence.com/HPPlanetPartners

[23] Visit hp.com/recycle to see how to participate; take-back program may not be available in your jurisdiction. Where this program is not available, and for other consumables not included in the program, consult your local waste authorities on appropriate disposal.

[24] The following countries have chemical inventory requirements and the HP 832 and 873 inks can be imported without restriction: Australia (AICS), Canada (NDSL and DSL), China (IECSC), Providence of Ontario, Japan (ENCS), Korea (KECI, K-REACH), New Zealand (NZIoC), Switzerland (ChemO), Taiwan (ECSI, Taiwan REACH), United States (TSCA)

[25] Visit hplatexknowledgecenter.com/blog/hp-ecosolutions-training for more information