Avril 2024

Rapport de test personnalisé

Canon imagePROGRAF PRO-4600 vs Epson SureColor SC-P9500

Avantage ✓	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
Qualité d'image	✓	
Productivité	✓	
Impression de bannières	✓	
Consommation d'encre	✓	
Fonction d'impression directe	✓	
Ensemble des fonctions de l'imprimante	✓	
Ensemble des fonctions du pilote d'impression	✓	
Fiabilité des têtes d'impression/ Procédures de nettoyage	=	=

Objectif

Suite à la demande de Canon Europe, Keypoint Intelligence a effectué des tests confidentiels relatifs aux performances des systèmes d'impression Canon imagePROGRAF PRO-4600 et Epson SureColor SC-P9500 de 44 pouces et produit un rapport comparant les forces et faiblesses des deux produits en ce qui concerne la qualité d'image, la productivité, la consommation d'encre, la fonction d'impression directe, l'ensemble des fonctions de l'imprimante, les fonctionnalités du pilote ainsi que la stabilité des têtes d'impression et les procédures de nettoyage. Tous les tests ont été réalisés dans le centre d'essai de Keypoint Intelligence à Wokingham, au Royaume-Uni.

Résumé

Dans le cadre du test d'évaluation de la reproduction des documents d'art graphique mené par Keypoint Intelligence, l'imprimante Canon imagePROGRAF PRO-4600 a généralement surpassé sa concurrente Epson SureColor SC-P9500, montrant une qualité d'image supérieure pour le marché de la photographie et des beaux-arts, une productivité accrue et une consommation d'encre plus efficace. Cette imprimante est également plus riche et abrite un ensemble plus vaste de fonctions du pilote d'impression ainsi que des possibilités d'impression directe. En termes de qualité d'image, l'imprimante Epson SC-P9500 a produit des sorties de haute qualité, optimales pour la photographie et les beaux-arts, et restitué une gamme de couleurs plus étendue. Le modèle Epson propose une option « Black Enhance Overcoat » qui permet d'obtenir une densité de noir plus élevée. Toutefois, l'imprimante Canon PRO-4600 a révélé des couleurs plus lumineuses et percutantes, des détails précis plus nets ainsi qu'un meilleur contraste, en plus d'une reproduction plus fine et plus claire du texte et des dessins au trait. Les deux modèles ont fourni d'excellents niveaux de gris et des demi-teintes similaires à la photographie, avec une très bonne profondeur de champ et sans aucun grain, ainsi que des tons chair naturels. La nouvelle formulation de l'encre Canon, qui contient de la cire, semble renforcer la résistance aux rayures, bien que cela n'ait pas été testé par Keypoint Intelligence.

Du point de vue de la productivité, le modèle Canon a dominé tous les tests de sortie de la première impression et tests de vitesse, sauf un. Cela s'explique d'une part, par le système de remplacement à chaud des cartouches d'encre, véritable marque de fabrique de Canon, et d'autre part, par une configuration en option à double rouleau qui permet d'utiliser un deuxième rouleau comme système d'enroulement pour simplifier les longs flux de production non supervisés ; un enrouleur est proposé en option sur le modèle Epson, moyennant supplément. La facilité d'utilisation des deux produits est avérée, notamment grâce à l'éclairage interne qui indique l'état d'impression, des écrans tactiles intuitifs qui facilitent les opérations effectuées depuis l'imprimante et un remplacement aisé des consommables. Le modèle PRO-4600 possède des fonctionnalités caractéristiques comme des réservoirs d'encre remplaçables à chaud, ainsi que des fonctions efficaces de chargement du support, dont la détection automatique du type de support et de la quantité restante, sans nécessiter de code-barre imprimé. Le chargement des supports est relativement simple sur le modèle Epson, mais exige plus d'interventions de la part de l'utilisateur ; le suivi du papier au moyen d'un code-barre imprimé est également pris en charge.

Les deux produits offrent des outils complets de comptabilisation des travaux et des utilitaires d'impression directe tout aussi intuitifs ; l'imprimante PRO-4600 prend également en charge une application mobile OEM et Apple AirPrint pour une soumission aisée des tâches à distance (non disponible sur le modèle Epson). À cela viennent s'ajouter la connectivité sans fil, l'impression directe via un périphérique USB et un disque dur de 500 Go de série. Ces fonctions ne sont pas disponibles sur le modèle Epson qui propose seulement un disque dur de 320 Go en option. Le panier de collecte configurable de l'imprimante Epson permet de collecter les documents face imprimée vers le haut et à plat, pour un seul travail à la fois. Cette dernière prend également en charge en option un SpectroProofer avec spectrophotomètre Xrite ILS30 pour une gestion plus avancée des couleurs. Pour finir, les têtes d'impression des deux imprimantes se sont bien comportées pendant l'évaluation, sans rencontrer de problème d'encrassement des buses après un week-end d'arrêt. Dans l'ensemble, l'imprimante Canon PRO-4600 s'est avérée plus performante grâce à sa qualité d'image supérieure, ses vitesses d'exécution plus élevées et sa consommation d'encre plus économique, mais aussi grâce à sa fonction d'impression directe plus évoluée et à un ensemble de fonctions du pilote d'impression et de l'imprimante plus complet.

Image Quality

Advantage ✓	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
Text	✓	
Fine Lines	✓	
1x1 Pixel Grid	✓	
Halftone Range	=	=
Halftone Fill	=	=
Solid Density	✓	
Colour Drift Across FOGRA39	✓	
Skin Tone Consistency		✓
Neutral Grey Consistency	✓	
Photographic Images	✓	
Colour Gamut		✓

Keypoint Intelligence conducted an image quality test evaluation using Canon's Premium semi-glossy 280gsm and Epson's Premium semi-gloss photo 250gsm. For this test, the quality settings were adjusted to 'Highest' on the Canon model and 'Max Quality' on the Epson model. The Canon PRO-4600 was tested with its Chroma Optimizer set to auto (the default setting), while the Epson model included the Black Enhance Overcoat feature, which was enabled for the test despite being off by default, to ensure comparable optimum quality.

Keypoint Intelligence colour and greyscale halftone test targets

- The PRO-4600 delivered dark, smooth, and distinct serif fonts that were fully formed at the 5-pt. level and rated good, while sans serif fonts were crisp and fully formed at the 3-pt. level and judged very good. Text produced by the Epson SC-P9500 was fully formed at the smallest 3-pt. level; characters were jagged and lacked smoothness under magnification and rated good.
- Both models' fine line artwork was crisp and clean at the 0.1-pt. level; the PRO-4600 produced marginally more slender lines compared to the Epson SC-P9500 and were rated excellent with Epson's rated very good.
- The PRO-4600's circles were relatively smooth and distinct and judged very good at the 0.1-pt. level. In contrast, the Epson SC-P9500's circles at the 0.1-pt. level were jagged and rated fair.
- The PRO-4600 produced very good CMYK 1x1 pixel grids with consistent dot formation and dot laydown. The Epson SC-P9500's CMY 1x1 grids were incomplete; its black-on-white 2x2 grid was intact with inconsistent dot formation and rated fair, overall.
- Both models delivered colour and black halftone output across the full range—from the 10% to the 100% dot-fill levels—with distinct transitions between all levels.
- Both models delivered an impressive range of halftone fills in colour mode, with no banding or graininess issues. Neutral greyscale halftone coverage was equally excellent from both units.
- The Canon PRO-4600 produced higher cyan, magenta, and yellow optical densities, while the Epson SC-P9500 had the higher black optical density.
- The Epson SC-P9500 delivered a lower drift in two of the three skin tone tests, with the Canon model's drift lower than that of the Epson in the remaining test.
- Neutral grey consistency was better maintained by the Canon PRO-4600 with a lower variance across the page.
- In Keypoint Intelligence's colour drift analysis, which involves printing and measuring (using EFI Color Verifier software), a FOGRA39 media wedge before and after productivity and ink consumption tests, the Canon device's mean Delta E drift (0.5) was fractionally lower than that of the Epson (0.6).

- When printing on semi glossy media in highest quality settings, the Canon PRO-4600 delivered a 16.4% smaller colour gamut—748,491 CIE volume versus 895,234 CIE volume for the Epson model.
- Keypoint Intelligence technicians rated the colour and greyscale images from both devices as exceptionally high quality. However, the Canon PRO-4600's output was judged superior in several areas. It exhibited brighter, richer memory colours, sharper fine detailing, and better contrast in both light and dark areas. Its metallics and pearlescents were more lustrous. Both models produced natural-looking skin tones that were smooth with very good detailing.
- Both devices delivered excellent greyscale photographic-like halftones with very good depth of field and no graininess. Canon's image had better depth of field and sharper fine detailing and textures in light and dark contrast areas, while Epson's image was slightly dark and hence lacked fine detailing in certain dark areas.

Print Productivity

Advantage ✓	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
First Print Out from Ready State Portrait Printing	✓	
First Print Out from Ready State Retail Poster Printing	✓	
Throughput Speed A1 Portrait Printing	✓	
Throughput Speed A1 Retail Poster	✓	
Throughput Speed A0 Portrait Printing	✓	
Throughput Speed A0 Retail Poster	✓	

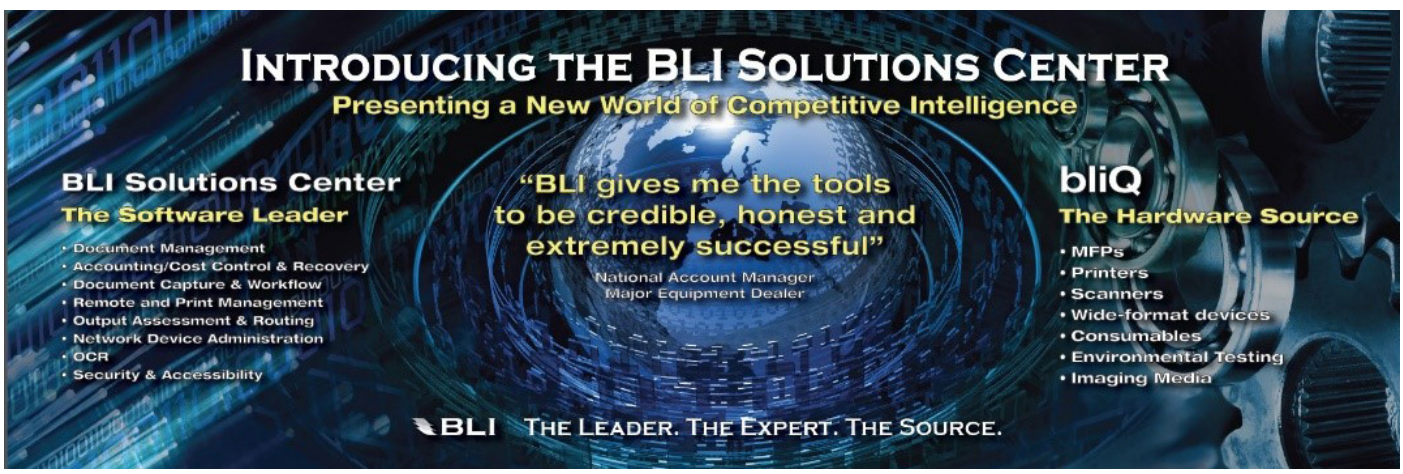
Productivity evaluation is based on Standard/Quality Lv2, High/High Quality Lv3, and Highest/Max Quality Lv5 modes.

- When printing a single high-resolution portrait from ready state, the Canon PRO-4600 scored a faster first-print-out time in all three tested speeds. It was 56.3% faster in Standard/Quality mode, 54.9% faster in High/High Quality mode, and 61.5% faster in Highest/Max Quality mode when compared with the Epson model.
- When printing a single medium-resolution retail poster from ready state, the Canon model was faster than the Epson SC-P9500; it was 41.4% faster in Standard/Quality, 14.8% faster in High/High Quality, and 63.8% faster in Highest/Max Quality mode.
- In Keypoint Intelligence's A1 high-resolution portrait throughput speed evaluation, the Canon PRO-4600's per-page speed was 54.5% faster in Standard/Quality mode, 53.1% faster in High/High Quality, and 67.4% faster in Highest/Max Quality mode when compared with the Epson model.
- When printing five copies of a single-page A1-size medium-resolution retail poster test document, both models' per-page speeds were comparable in High/High Quality mode. In Standard/Quality mode, the PRO-4600's per-page speeds were 37.3% faster. Additionally, it was 72.4% faster in Highest/Max Quality mode compared with the Epson SC-P9500.
- In the A0 high-resolution portrait throughput speed evaluation, the Canon PRO-4600 had the faster per-page speed in all tested modes; it was 53.8% faster in Standard/Quality mode, 50.4% faster in High/High Quality mode, and 58.3% faster in Highest/Max Quality mode compared with the Epson SC-P9500.

- When printing five copies of a single-page A0-size medium-resolution retail poster test document, the Canon device's per-page speed was 32.1% faster in Standard/Quality mode, 9.0% faster in High/High Quality mode, and 63.4% faster in Highest/Max Quality mode compared with the Epson SC-P9500.

Banner Printing

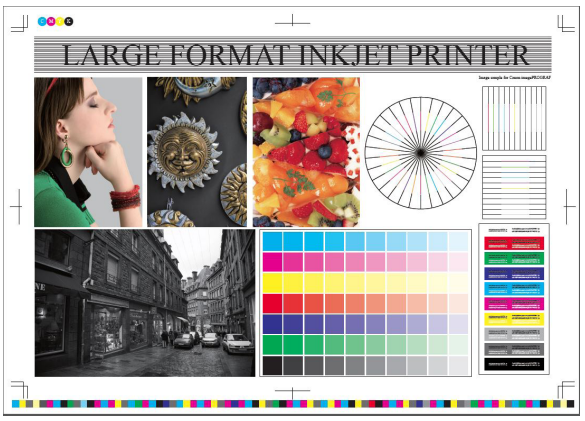
Advantage ✓	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
Image Quality	=	=
Productivity	✓	



Keypoint Intelligence 24" x 70" banner (4,955-KB PDF file)

- The Canon PRO-4600 successfully printed the banner in Standard mode, taking 30.96 seconds to generate a preview at the desktop, and an additional three minutes, 13.70 seconds from preview to final paper cut.
- As there was some minimal banding visible, the banner was printed with Canon's unidirectional feature enabled, which eliminated the banding; the time from preview to final paper cut was seven minutes, 48.16 seconds.
- The Epson SC-P9500 printed the whole banner image in Quality Lv2 mode with no image quality issues; it took 41.31 seconds to generate a preview, and an additional nine minutes, 42.71 seconds from preview to final paper cut.

Ink Consumption



Packaging Proof

Retail Sales Poster

Studio Portrait

Keypoint Intelligence technicians observed that, owing to the vagaries of inkjet technology (for example, head flushing and calibration routines can occur at any time during testing), the same test can produce different results at different times. Although Keypoint Intelligence makes every effort to ensure that devices are tested on a level playing field, the test results should be regarded as an indicator of likely performance and not as a prediction of actual ink consumption in a real-world environment.

Overall Weight of Ink Used (in Grams)

	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
Packaging Proof	80.9	277.1
Retail Sales Poster	89.7	209.2
Studio Portrait	132.0	257.1

Results are averaged across three sets of 50-page A1 printing in High/High Quality Lv3 mode.

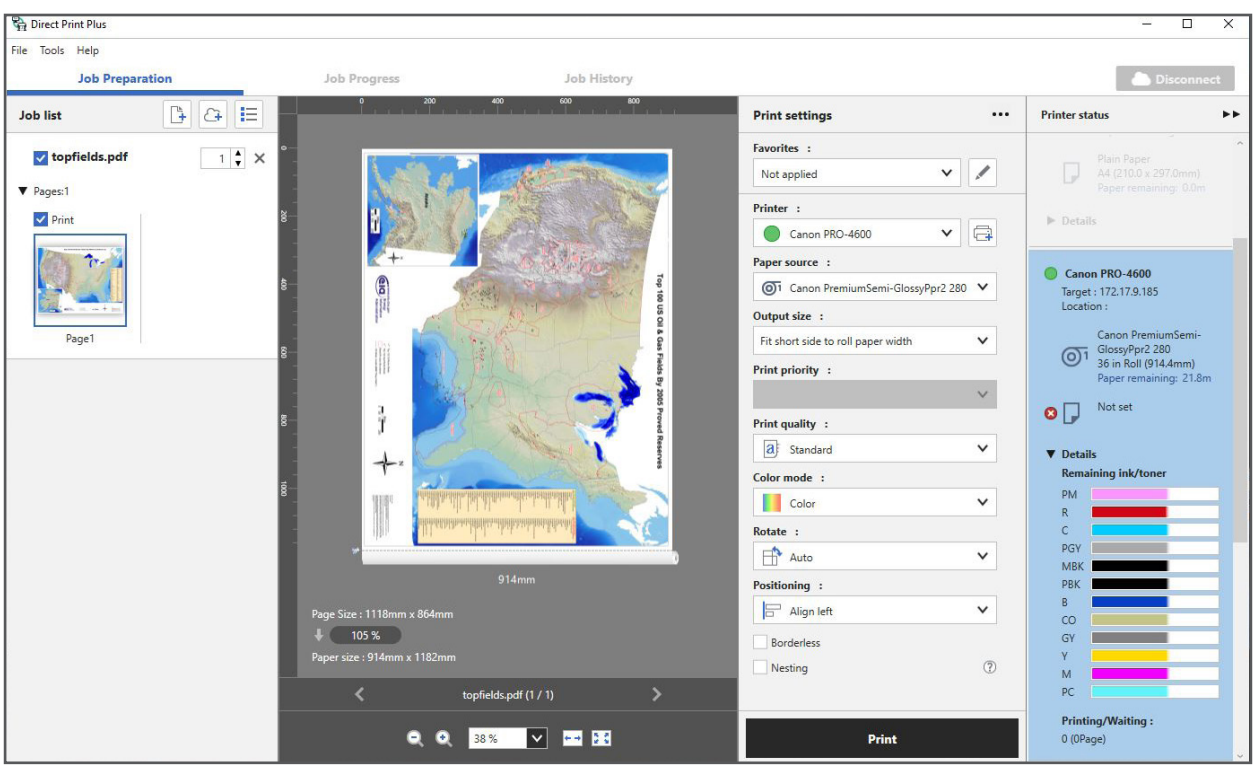
- In High/High Quality mode on proofing media, the Canon PRO-4600 used 70.8% less ink than the Epson SC-P9500 when printing a Packaging Proof test target, using only 0.9% of its total ink compared to 6.4% for the Epson.
- When printing the Retail Sales Poster test target on matte coated media, the Canon unit used 57.1% less ink compared with the Epson SC-P9500. For the same print scenario, the Canon PRO-4600 used 1.0% of its total available ink, while the Epson model used 4.8%.
- In the Studio Portrait ink consumption test using semi-gloss photo media, the Canon PRO-4600 used 48.7% less ink compared with the Epson device, which meant it used 1.5% of its total available ink for the test, while the Epson SC-P9500 used 5.9%.

Direct Print Submission Functionality

Advantage ✓	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500*
Ease of Use	=	=
Direct Print Submission Functionality	✓	
Mobile App Integration	✓	

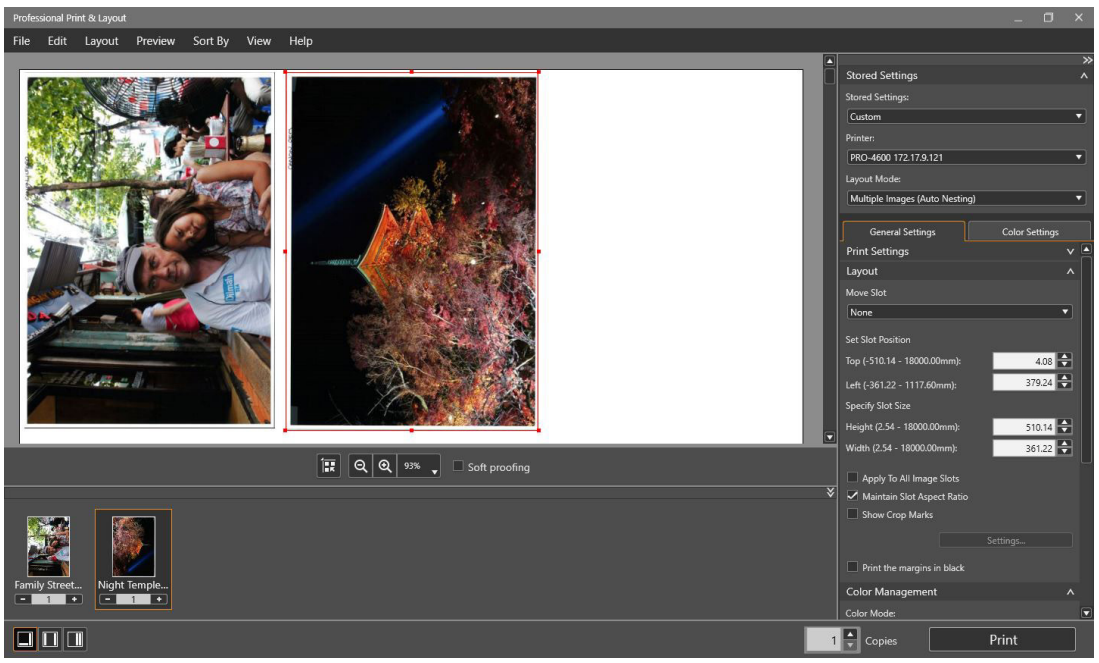
*Keypoint Intelligence technicians did not test Epson's optional, extra-cost PostScript module, and therefore did not assess its functionality.

- Canon's Direct Print Plus, featuring a Canon-developed PDF engine, offers a user-friendly interface with improved PDF file processing and printing. Its layout includes three tabs: Job Preparation (the home screen), Job Progress, and Job History. The Job Preparation tab is divided into four sections—Job list, Preview, Print settings, and Printer status—allowing quick access to job settings, previews, and printer status information without the need to link to the Status Monitor. The bidirectional communication between the utility and the printer means there's less chance of media mismatch.



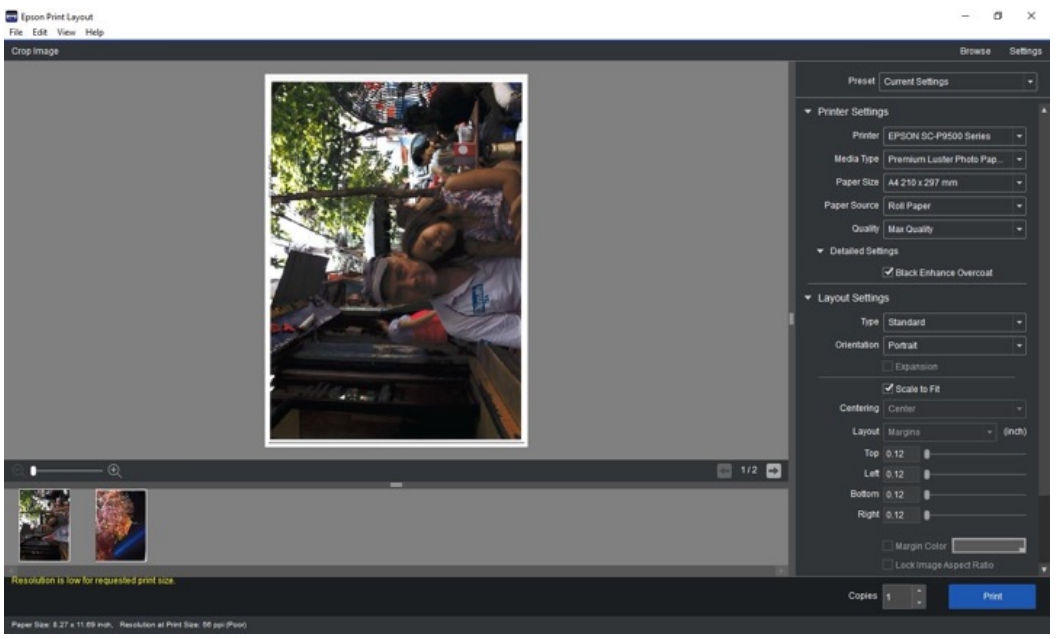
Direct Print Plus job submission software enables the direct printing of PDF, JPEG, TIFF, and HPGL/2 files without the need for native applications or print drivers. From the Job History tab, users can select and reprint jobs using the same settings as when last printed. Job progress indicates how many pages have been printed so far to provide operators with better visibility over the progress of a print job. There is also a link to Canon Accounting Manager to keep track of project costs.

- Direct Print Plus supports 'Shortcut Print' functionality which helps streamline print workflows. Akin to a hot folder workflow, users can create desktop shortcuts that allow drag and drop automatic file printing with predefined print settings. Multiple desktop icons can be created containing different print settings or combinations of print settings.



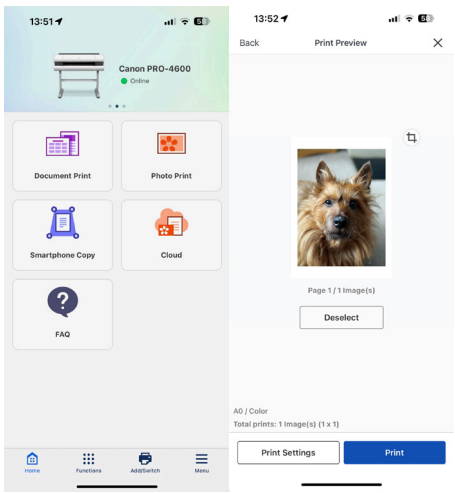
Canon's Professional Print & Layout utility offers an easy-to-use interface. The latest version (V1.4) can automatically retrieve paper type information from the printer.

- Canon's Professional Print & Layout software enables files—even those from different applications—to be scaled, resized, or grouped together as a single job. It features both auto and flexible nesting options for more efficient media use, with the latter allowing users to manually arrange images on a page. Previews, soft proofing, and pattern printing all enable users to check and adjust colour balance, contrast, and brightness. This is done by creating variations with the resulting 'pattern' allowing user to identify and select the desirable value.
- Job setting adjustments include colour management, print quality, image rotation, amongst others. The utility supports plug-in features with various software options designed to appeal to specific segments of the Graphic Arts market, such as photography and fine art display. These include a print plug-in for Photoshop, which, according to Canon, allows users to print 16-bit files directly from Adobe RGB with a wide gamut and clear tonal gradation, as well as a plug-in for DPP (Digital Photo Professional) that includes a 'Digital Lens Optimizer' to improve photographic image quality and enhance depth of field; Adobe Lightroom is also supported.

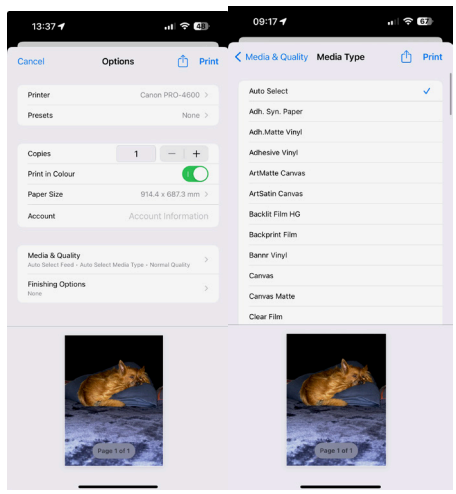


Epson Print Layout provides user friendly job submission procedures and a broad range of job and layout adjustment options.

- Epson users can download Epson Print Layout, a free utility, from the vendor's website which enables the direct printing of JPEG and TIFF files. Users can preview print layouts, view thumbnail images of multiple print jobs, and select colour management and print settings directly within the utility. Users can also save job settings as presets (more than 100 presets can be saved) for easy repeat work. The utility has a plug-in function for Adobe Photoshop and Adobe Lightroom, as well as Nikon ViewNX-I, allowing users to preview and print photos directly from Nikon's image hub.
- An optional (extra-cost) PostScript module, which was not evaluated, will provide Epson users direct printing functionality, enabling PDF printing directly from programs such as AutoCAD, as well as the ability to print EPS, JPEG, TIFF, and Cals-G4 formats. The module also provides hot-folder 'drag-and-drop' functionality with configurable job processing options.
- In terms of mobile print support, Canon's free Canon PRINT mobile print app is an easy way for users to print wirelessly to the PRO series and other compatible Canon large-format printers on the same WiFi network. It offers a broad range of print settings, including colour, orientation, and borderless printing and is very straightforward to use. Android users can use Canon Print Service app to print from their smart devices, as well. There's no proprietary mobile app supported by the Epson SureColor SC-P9500.
- Additionally, the PRO-4600 (but not the Epson model) supports mobile printing via AirPrint.



Canon PRINT mobile print app



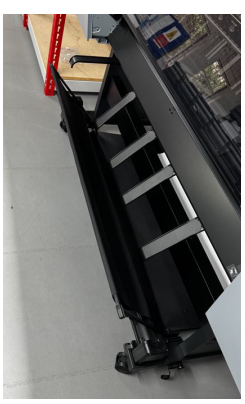
Printing with Apple AirPrint

Device Feature Set

- The PRO-4600 features a 12-ink set with enhanced colours, including red, blue, two blacks, two greys, and a Chroma Optimizer for gloss uniformity. New ink formulation includes wax in the pigment ink, which according to Canon, increases resistance to scratching. The Epson SureColor SC-P9500 also uses a 12-ink system with orange, green, violet inks, and a Black Enhance Overcoat for deeper blacks, according to Epson. Canon has the advantage of allowing ink replacement during operation, reducing downtime. It offers 160/330/700 ml cartridge sizes while the Epson supports 350/700 ml options.
- The Canon unit's ink delivery system dispenses a slightly larger 4-picoliter drop size for all colours than the Epson (3.5-picoliter for all colours).
- The Canon unit has a user-replaceable printhead, taking less than five minutes to replace with the process initiated on the control panel, whereas the Epson unit's printhead is only service-replaceable (according to the manufacturer it is designed to last the life of printer).
- The Epson SC-P9500 offers simple user maintenance procedures to minimize downtime, with manual printhead and cap cleaning (using swabs to clean gently around the inner edges), and borderless maintenance box replacement. Automatic printhead maintenance is available on both devices.
- The Canon PRO-4600 offers a user-friendly, fast media loading process. Its smart roll paper set function allows for automatic media feeding once the roll is secured. As the roll rotates, a proximity sensor detects the edge of the paper and allows the printer to complete the loading process, minimizing user intervention. Built-in sensors identify paper characteristics, including type and thickness, and remember settings for future use, further reducing the need for manual input (in the event of a brand-new media being used for the first time on the device, the operator may need to indicate the media type on the control panel).
- The Epson SC-P9500 offers straightforward media loading at the top of the device. The machine has a handy resting area to place rolls when loading and unloading media. The operator must manually feed the paper edge into the machine until there is an audible beep, after which the printer will load the paper automatically, if the Auto Paper Feed option is enabled. To complete the process, the operator must confirm the media type on the control panel and then close the roll cover.

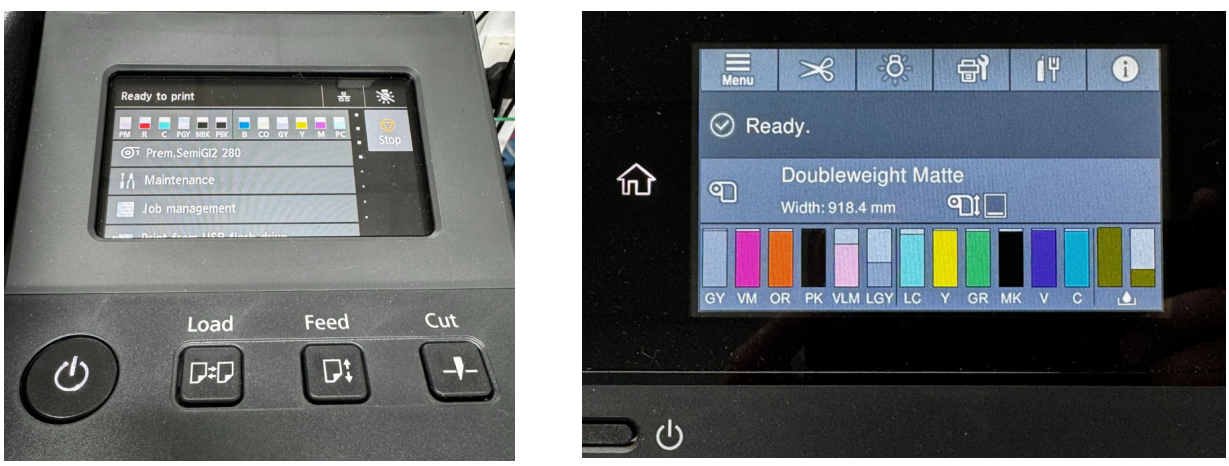
- The Canon PRO-4600 enhances efficiency with dual sensors that measure, estimate, and display the remaining roll length on its touchscreen. This feature eliminates barcode printing and reading for partially-used rolls, and alerts operators if there's insufficient media to complete a job, reducing the risk of unexpected runouts.
- The Epson SC-P9500 features convenient paper tracking (must be enabled), allowing users to print a media information barcode on a partial roll's edge, indicating remaining length and paper type, which is also displayed on the control panel.
- The PRO-4600's media mismatch feature temporarily holds jobs that require different media than what's loaded, while continuing to print jobs matching the current media; it automatically resumes held jobs once the correct paper is in place. In contrast, in our testing the Epson printer will process and print a job regardless of a media mismatch, without any driver or control panel warnings.
- Borderless printing is supported on both printers however the PRO-4600 prints borderless on all paper rolls widths regardless of type and size, with a media sensor detecting the edges and automatically adjusting the margin, so there is no ink waste; users can choose free size or three-sided borderless. The Epson SC-P9500 supports borderless printing with certain select media and common media widths.

Canon PRO-4600 catch basket

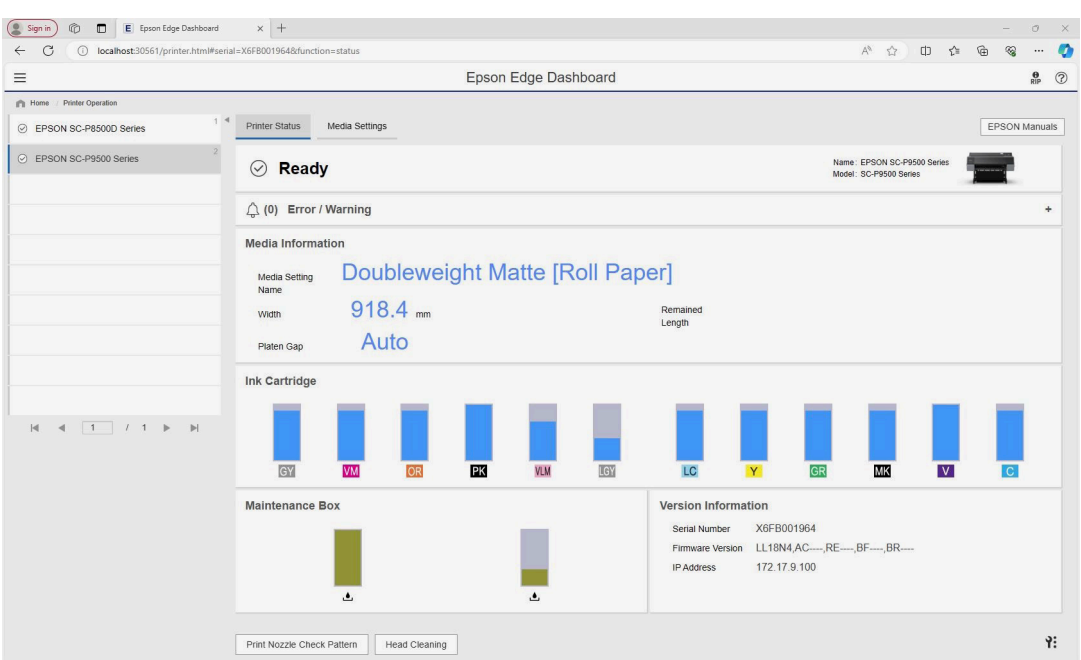


Epson SC-P9500 catch basket in two configurations

- Both models offer an illuminated interior (enabled from the control panel) to make it easy and convenient for the user to identify the printing position and status of the job that's being printed.
- Both models feature bright and responsive touchscreens which offer clear menu settings to simplify walk-up operation. From the home screen, operators can readily view printer and consumable ink status. When the printers are active, the displays show the current job's title and remaining print time for the current page, with the Epson SC-P9500 also showing the count of printed pages in the ongoing job, offering users a clear idea of the printing progress. Canon users can access similar information but through the Status Monitor on their desktop; they also benefit from the ability to browse the menu during printing, a feature requiring a pause in operation on the Epson device.
- Cloud-based Epson Edge Dashboard enables Epson users to monitor and view device and consumable status for all networked SureColor devices. It also offers error conditions and allows printhead cleaning and maintenance routines to be performed remotely from the utility.



Canon PRO-4600 (left) and Epson SC-P9500 (right) control panels



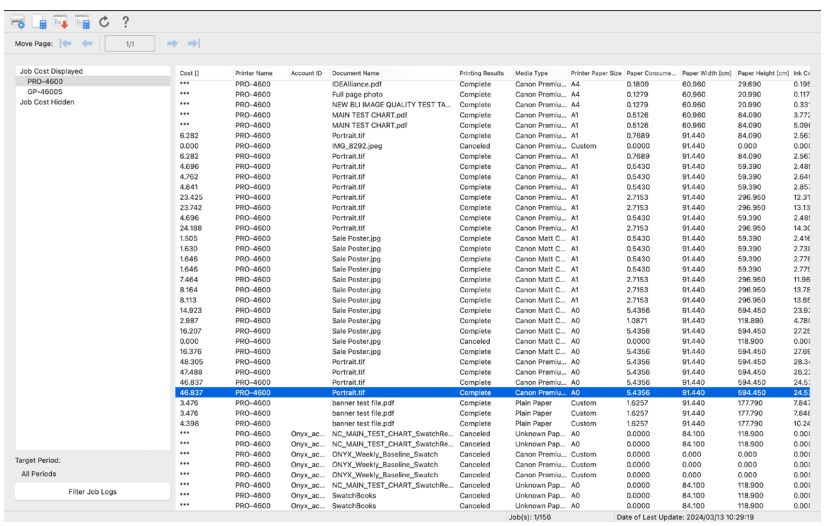
Epson Edge Dashboard

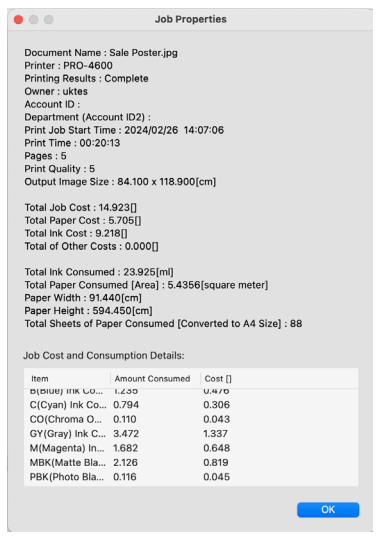
- The Canon model is lighter (124 kg versus 153.8 kg) than the Epson unit, and more compact, with a width of 1,593 mm versus 1,909 mm for the Epson SC-P9500.
- The Canon PRO-4600'S power consumption in standby mode is slightly lower—2.3 watts versus 3.4 watts—to that of the Epson model, while printing its rated power consumption is 85 watts versus Epson SC-P9500's 110 watts.

Print Driver Feature Set

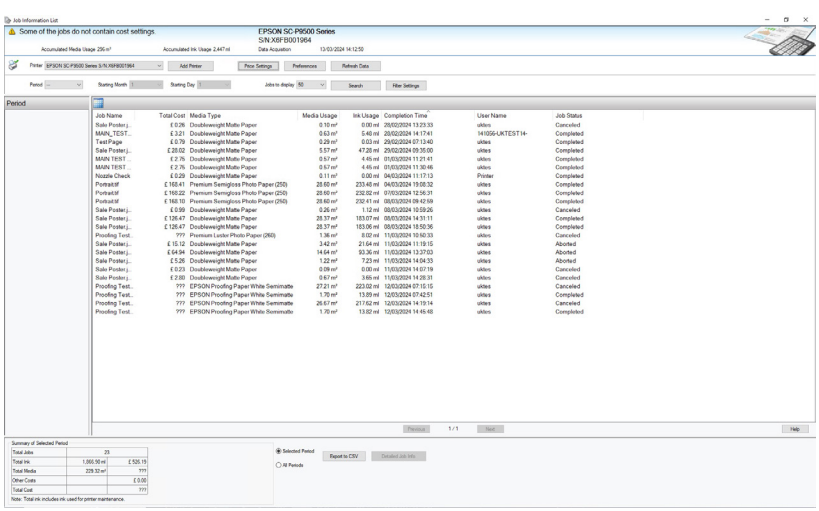
- Both models offer a variety of speed settings, although depending on the media type selected, not all speed options will be available.
- The Canon driver includes 64 media profiles versus 33 for the Epson driver. The Epson Media Installer utility (which can be linked via the Utility tab in the printer driver) allows users to create and store up to 30 custom media profiles for use when printing on third-party media or paper that's not supported in the printer driver. Canon's Media Configuration Tool allows for new custom media types to be registered based on custom media information added to the printer, and users can also organize media shown on the control panel or driver, rename and show/hide information.
- The PRO-4600 driver features include a watermark capability (not available with the Epson driver), and N-up printing (16-up maximum), with only 2 to 4 multi-up printing supported on the Epson. The Canon is limited to a 2 by 2 poster mode, while the Epson model supports 4 by 4 posters.
- The Canon driver offers page stamping (Date, Time, Name, and Page Number), while the Epson driver offers a much wider range of options, including a wide variety of image quality attributes.
- The Canon driver has a unidirectional printing option, which helps to eliminate banding across output because the printhead travels in only one direction when creating the image. When 'High Speed' feature is disabled in the Epson driver, the Epson SC-P9500 will switch to unidirectional mode.
- Both models' drivers offer a wide range of built-in adjustments for CMY, balance, brightness, and contrast. ICC profile settings are also available with both drivers—in the case of Canon's driver in its Matching tab under Colour Settings. Canon operators can select four modes— Driver Matching, ICC Profile Matching, ICM (and choose one of four rendering methods—perceptual, relative colorimetric, absolute colorimetric or saturation) or Off. The Epson driver offers Driver ICM (Basic or Advanced) and Host ICM, and the same four rendering methods. The Black Enhance Overcoat option improves sharpness on glossy media and enhances black density, according to the manufacturer. Epson's optional SpectroProofer provides advanced colour management capabilities, a feature that Canon does not offer.
- The Canon driver includes Colour imageRUNNER Enlargement Copy Mode utility, which allows users to integrate a Canon MFP or other scanner with the PRO-4600. Documents scanned by the Canon MFP, or another configured scanner are automatically routed to a hot folder, which is monitored by the PRO-4600 driver. The image is then resized and printed, offering a fast, easy-to-use poster creation tool for office users.
- The Canon model offers a plug-in for printing from Microsoft Office applications, which includes useful tools for automatic media resizing, nesting, and borderless printing. Epson offers similar software, Epson Print Plug-in for Office (available as a free download), which adds a 'ribbon' to the Microsoft Office application menu. It offers buttons for fast printing and for printing banners exceeding standard paper sizes in MS Office Word, PowerPoint, and Excel (the latter without banner printing).
- The PRO-4600 is compatible with a free Canon Accounting Manager utility. Users can log actual costs for individual inks and media types for cost per job tracking and reporting. Job information on areas including media type, print area, ink used, and total print time is recorded, and more granular cost and consumption details can be obtained by double-clicking on an individual job name or by highlighting a

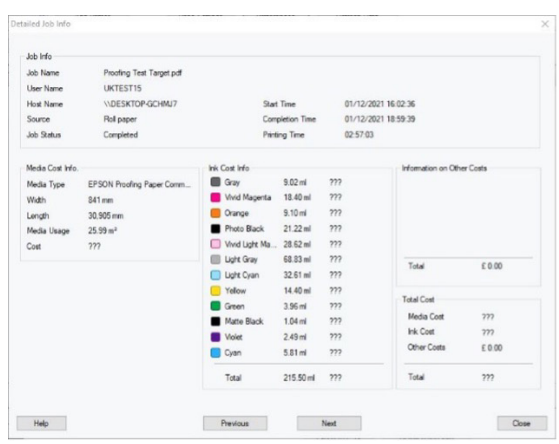
range of different jobs. Job management reports can be exported in .CSV format. Epson offers the free LFP Accounting Tool which automates accounting for SureColor users. In addition to tracking the costs of ink and media, the utility can track ancillary costs such as lamination, labor, and transportation.





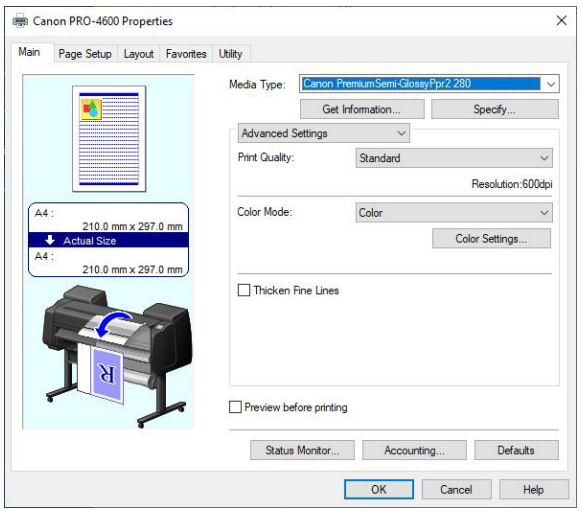
Canon Accounting Manager



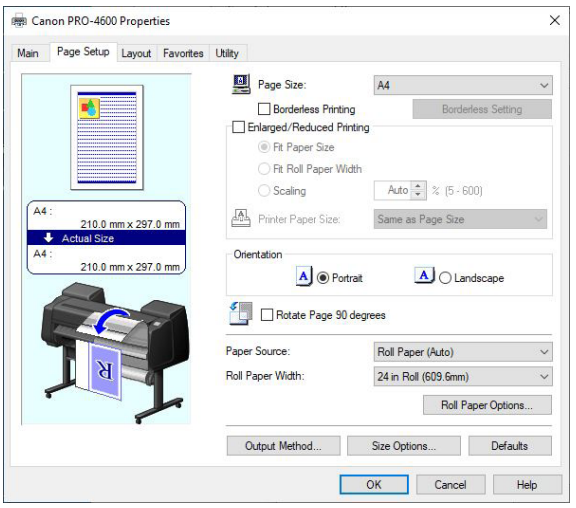


Epson LFP Accounting Tool. Keypoint Intelligence technicians liked the colour-coded ink cost information for easy lookup.

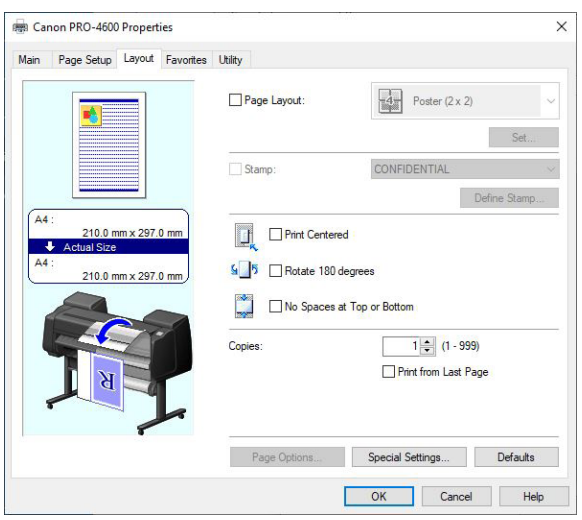
Test Models' Print Driver Screenshots



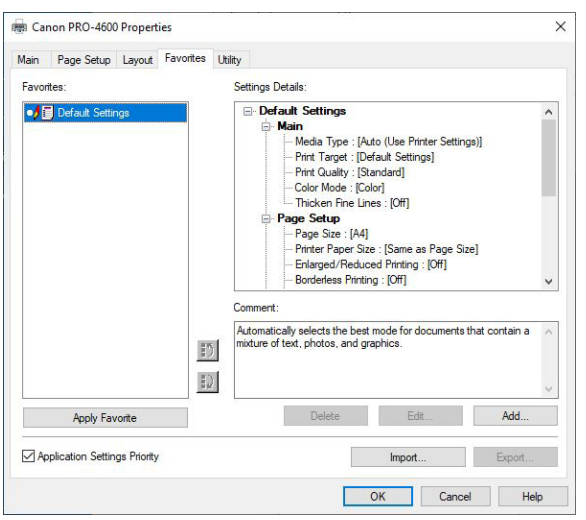
Canon PRO-4600 Main tab



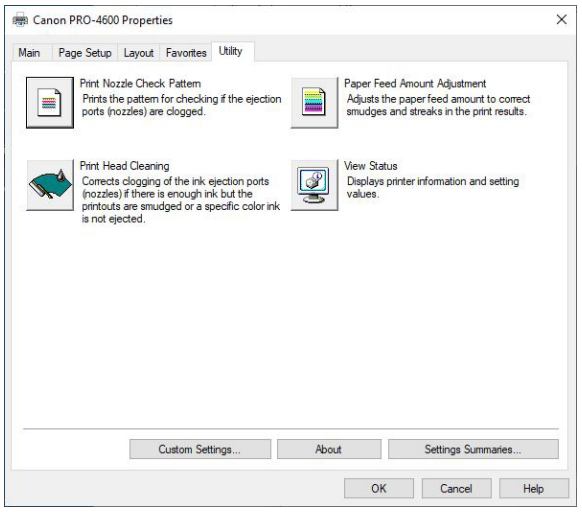
Canon PRO-4600 Page Setup tab



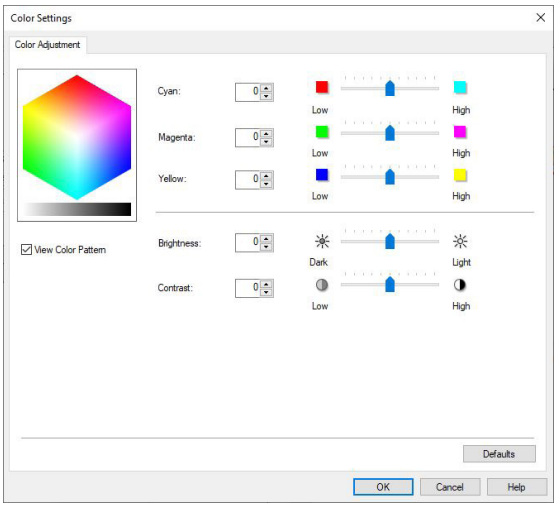
Canon PRO-4600 Layout tab



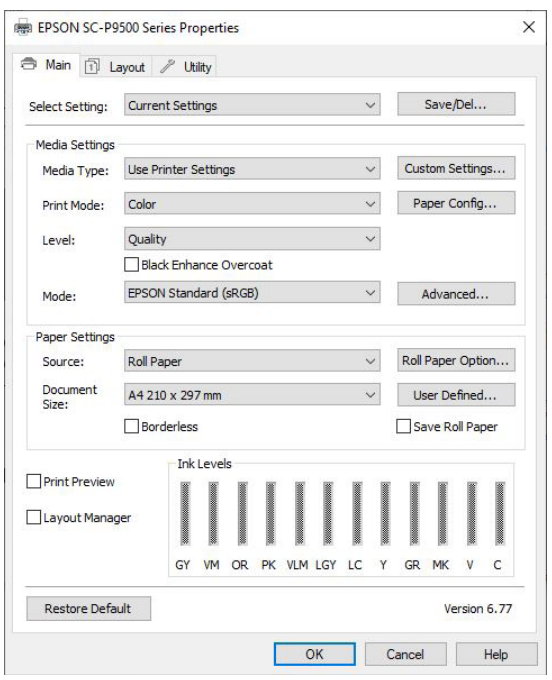
Canon PRO-4600 Favourites tab

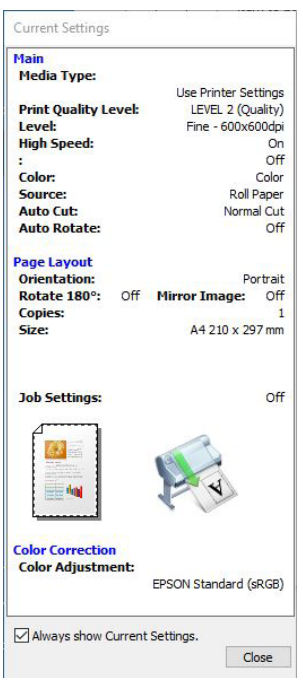


Canon PRO-4600 Utilities tab

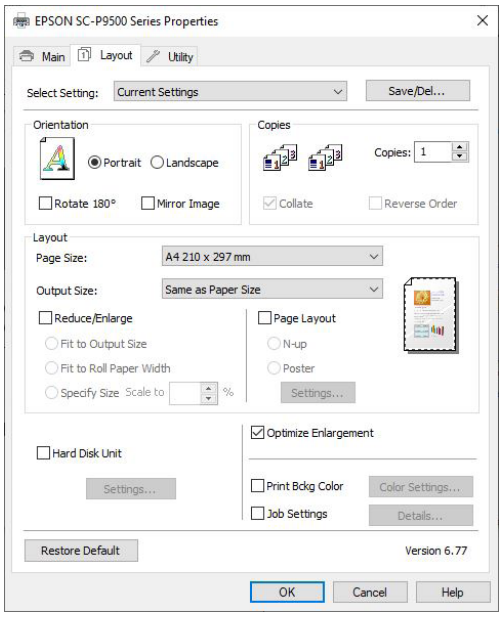


Canon PRO-4600 Colour Adjustment Settings tab

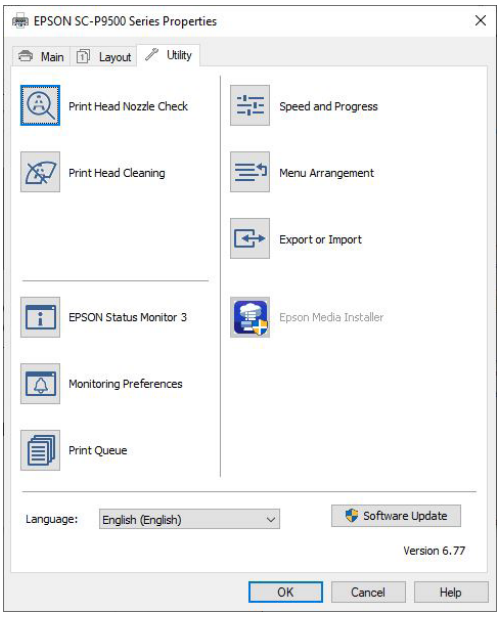




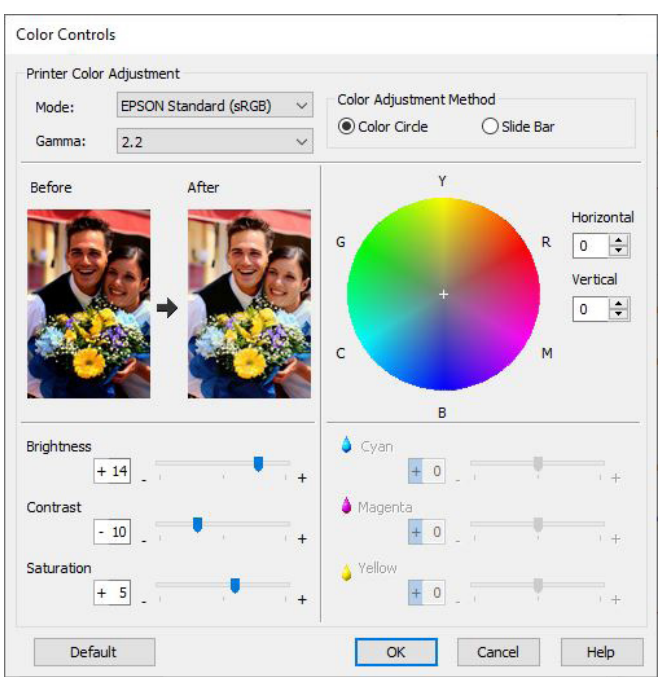
Epson SureColor SC-P9500 Main Tab with Current Settings



Epson SureColor SC-P9500 Layout Tab



Epson SureColor SC-P9500 Utility Tab



Epson SureColor SC-P9500 Colour Control Settings

Printhead Reliability and Cleaning Routines

- The Canon PRO-4600 offers a printhead nozzle check, accessible through both the control panel and the embedded web page. Set to 'Auto nozzle check' by default, this function automatically monitors the nozzles at specified intervals. Users have the flexibility to set these intervals based on specific page counts. The Epson SC-P9500, equipped with an Auto Cleaning function, allows users to choose when to perform nozzle checks (during or after printing) and the sensitivity level (Standard or High). Nozzle checks can be initiated from both the printer driver and the control panel.
- The Canon offers an Ink Ejection Status check feature which can be set to Auto Fix, Display Warning, or Off. This is a newly developed ink sensing system designed to monitor ink ejection status, helping to prevent any deterioration in image quality.
- When detecting a clogged nozzle, the Canon printer automatically pauses, runs a cleaning cycle, and resumes printing once complete, requiring no user intervention. Similarly, the Epson printer, if set to Auto Cleaning, will conduct a printhead clean procedure upon detecting a clogged nozzle.
- For image quality issues, Canon users can initiate printhead cleaning cycles from the desktop or control panel, offering three levels: Cleaning (4 minutes), Deep Cleaning (4 minutes), and System Cleaning (up to 12 minutes). The latter (with standard and short options) is recommended if initial cleanings don't resolve nozzle clogs, with the choice to clean all colors or specific ink groups. Epson users have a 'Wiping the Printhead' option for choosing chips (pairs of colours) for cleaning, with the maintenance duration displayed on the control panel. For more thorough cleaning, a Power clean option is available, targeting different pairs of colours.
- A standard cleaning cycle performed on the Canon model takes approximately three minutes, 24 seconds on average to complete, whilst on the Epson model, a cleaning cycle lasts circa eight minutes, 30 seconds.
- After both devices were turned off over the course of a weekend, upon restarting the following Monday, they had no issues with clogged nozzles and printed a nozzle check pattern perfectly.

Supporting Test Data

Productivity

Colour Throughput Time – A1 High-Resolution Portrait Printing (in Seconds)

	Standard/Quality Lv2	High/High Quality Lv3	Highest/Max Quality Lv5
Canon imagePROGRAF PRO-4600	217.87	330.85	465.91
Epson SureColor SC-P9500	478.77	706.15	1,431.08

A single-page high-resolution A1 portrait was printed as a five-page job using the device driver set to the semi-gloss photo/colour setting. The Epson driver's Black Enhance Overcoat option was also enabled. Both devices were loaded with 36" rolls, with each job set to auto-rotate to save media. The time indicated is the average number of seconds (based on timing from the cutting of the first page to the cutting of the final page and dividing by four to exclude the initial processing time).

Colour Throughput Time – A1 Medium-Resolution Portrait Printing (in Seconds)

	Standard/Quality Lv2	High/High Quality Lv3	Highest/Max Quality Lv4
Canon imagePROGRAF PRO-4600	110.30	221.88	213.17
Epson SureColor SC-P9500	176.00	218.51	772.43

A single-page medium-resolution A1 portrait was printed as a five-page job using the device driver set to the matte coated/colour setting. The Epson driver's Black Enhance Overcoat option was also enabled. Both devices were loaded with 36" rolls, with each job set to auto-rotate to save media. The time indicated is the average number of seconds (based on timing from the cutting of the first page to the cutting of the final page and dividing by four to exclude the initial processing time).

Colour Throughput Time – A0 High-Resolution Portrait Printing (in Seconds)

	Standard/Quality Lv2	High/High Quality Lv3	Highest/Max Quality Lv5
Canon imagePROGRAF PRO-4600	429.86	684.93	1,127.17
Epson SureColor SC-P9500	930.82	1,381.93	2,704.31

A single-page high-resolution A0 portrait was printed as a five-page job using the device driver set to the semi-gloss photo/colour setting. The Epson driver's Black Enhance Overcoat option was also enabled. Both devices were loaded with 36" rolls, with each job set to auto-rotate to save media. The time indicated is the average number of seconds (based on timing from the cutting of the first page to the cutting of the final page and dividing by four to exclude the initial processing time).

Colour Throughput Time – A0 Medium-Resolution Portrait Printing (in Seconds)

	Standard/Quality Lv2	High/High Quality Lv3	Highest/Max Quality Lv4
Canon imagePROGRAF PRO-4600	231.78	417.12	607.18
Epson SureColor SC-P9500	341.56	458.78	1,656.70

A single-page medium-resolution A0 portrait was printed as a five-page job using the device driver set to the matte coated/colour setting. The Epson driver's Black Enhance Overcoat option was also enabled. Both devices were loaded with 36" rolls, with each job set to auto-rotate to save media. The time indicated is the average number of seconds (based on timing from the cutting of the first page to the cutting of the final page and dividing by four to exclude the initial processing time).

First-Print-Out Time from Ready State – High-Resolution Portrait Printing (in Seconds)

	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
	Standard	Quality Lv2	High	High Quality Lv3	Highest	Max Quality Lv5
Time Before Printing Commences	22.75	31.63	22.75	31.88	22.85	29.70
First Print Out Time	220.49	505.00	334.12	740.04	549.65	1,426.63

First-page-out times are determined by sending an A1 high-resolution portrait PDF file to print, timed from job release to page out, with both Canon and Epson drivers set to semi-gloss photo media. The Epson driver's Black Enhance Overcoat option was also enabled. Both devices were loaded with 36" rolls.

First-Print-Out Time from Ready State – Medium-Resolution Retail Poster Printing (in Seconds)

	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
	Standard	Quality Lv2	High	High Quality Lv3	Highest	Max Quality Lv4
Time Before Printing Commences	22.07	30.93	21.19	31.38	22.52	30.71
First Print Out Time	113.53	193.61	203.09	238.38	293.18	810.79

First-print-out times are achieved by sending an A1 medium-resolution retail sales poster PDF file to print, timed from job release to page out with both Canon and Epson drivers set to matte coated media. Both devices were loaded with 36" rolls.

Colour Print Quality

Canon imagePROGRAF PRO-4600						
	Highest					
	1	2	3	4	Max.	Min.
Cyan	2.38	2.35	2.37	2.39	2.39	2.35
Magenta	1.87	1.94	1.93	1.91	1.94	1.87
Yellow	1.42	1.41	1.41	1.41	1.42	1.41
Black	2.50	2.48	2.50	2.46	2.50	2.46

Epson SureColor SC-P9500						
	Max Quality					
	1	2	3	4	Max.	Min.
Cyan	1.71	1.69	1.71	1.71	1.71	1.69
Magenta	1.22	1.20	1.21	1.21	1.22	1.20
Yellow	1.36	1.36	1.36	1.37	1.37	1.36
Black	2.75	2.76	2.73	2.75	2.76	2.73

Note: Colour density readings were assessed by printing a Keypoint Intelligence proprietary PDF test target on proofing paper at the respective highest/max quality driver settings, with no colour correction. Density was measured with an XRite exact^{Xp} densitometer.

Skin Tone and Neutral Grey Consistency

	Skin Tone 1 (Formula: C=6, M=15, Y=16, K=0)	
	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
Colour block		
2	0.07	0.12
3	0.25	0.13
4	0.16	0.30
5	0.18	0.04
6	0.38	0.20
7	0.28	0.19
8	0.23	0.17
9	0.23	0.11
Max. Delta E Variance	**0.31**	**0.26**

	Skin Tone 2 (Formula: C=30, M=63, Y=75, K=0)	
	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
Colour block		
2	0.22	0.14
3	0.21	0.05
4	0.22	0.21
5	0.25	0.30
6	0.33	0.26
7	0.09	0.34
8	0.15	0.24
9	0.17	0.25
Max. Delta E Variance	**0.24**	**0.29**

	Skin Tone 3 (Formula: C=19, M=33, Y=50,K=0)	
	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
Colour block		
2	0.25	0.17
3	0.21	0.07
4	0.06	0.21
5	0.13	0.36
6	0.47	0.29
7	0.23	0.21
8	0.22	0.36
9	0.34	0.22
Max. Delta E Variance	**0.41**	**0.29**

	Neutral Grey	
	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
Colour block		
2	0.17	0.08
3	0.24	0.16
4	0.23	0.18
5	0.21	0.16
6	0.25	0.18
7	0.13	0.03
8	0.15	0.18
9	0.16	0.20
Max. Delta E Variance	**0.12**	**0.17**

Note: Skin tone and neutral grey consistency measurements are based on nine readings taken from a Keypoint Intelligence proprietary PDF test target file comprising four A1-sized solid coverage documents of three skin tones and a neutral grey with the Highest/Max Quality setting selected in the driver and the target printed on the manufacturer's own brand of proofing semi-gloss media, with no colour correction. Colour differences across the A1 image were measured comparing eight locations to that of the colour measured at the top left of the page, using an EFI ES1000 colour spectrophotometer and Gretag MacBeth EyeOne Share colour comparison software.

FOGRA 39 Drift Test

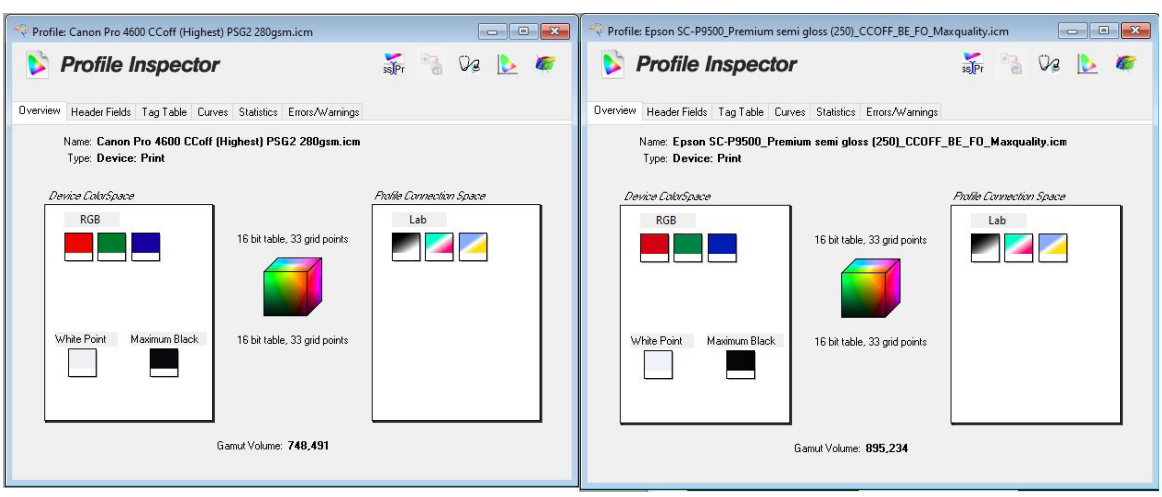
Comparison of FOGRA39 colour patches before and after ink consumption test

	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500
Delta E Drift	0.5	0.6

Colour Gamut Cubic L*a*b Unit Volume Comparison

Media Type/Settings	Canon imagePROGRAF PRO-4600	Epson SureColor SC-P9500	Canon % larger/smaller (-) than Epson
Premium Semi-Gloss Photo Paper Highest/Max Quality	748,491	895,234	-16.4%

Canon imagePROGRAF PRO-4600 colour gamut (shown chromatically) on semi-gloss photo paper in Highest mode with colour correction disabled versus Epson SureColor SC-P9500 colour gamut (red) on semi-gloss photo paper in Max Quality mode with colour adjustment disabled.



Colour gamut profile for Canon imagePROGRAF PRO-4600 (left) and Epson SureColor SC-P9500 (right) on semi-gloss photo paper in highest-quality mode.

Device Feature Set

	Canon imagePROGRAF PRO-4600	Advantage		Epson SureColor SC-P9500
Max. print resolution	2400 x 1200 dpi			2400 x 1200 dpi
Number of inks	12 (MBK, BK, C, M, Y, PC, PM, GY, PGY, R, B, CO)			12 (GY, VM, O, PBK, VLM, LGY, LC, Y, G, MBK, V, C)
Ink tanks replaceable during operation	Yes	✓		No
Ink-drop size	Minimum 4 picoliter		✓	Minimum 3.5 picoliter (variable)
Starter cartridge ink capacity	330 ml bundled starter ink per colour			INA

Ink cartridge capacity	160 ml, 330 ml, and 700 ml (all colours)			350 ml and 700 ml (all colours)
Number of nozzles	18,432 nozzles in total (1,536 x 12 channels)	✓		9,600 nozzles in total (800 nozzles per colour)
Number of printheads	1			1
Printhead replacement	User replaceable	✓		Service replaceable
Line accuracy	+/-0.1% or less			INA
Minimum line width	INA			INA
Minimum print margins	Roll paper: Borderless or 3 mm (all sides); Cut sheet: 3 mm (Top, Side), 20 mm (Bottom)			Borderless or 3 mm (all sides); Cut sheet: 3 mm (Top, Side), 14 mm (Bottom)
Borderless (0 mm) printing	Yes, all media and sizes supported	✓		Yes, with select media and sizes
Maximum outside diameter of roll paper	170 mm	✓		150 mm
Maximum printable paper roll length	Roll: 18 m (varies according to the OS, RIP, and application used)			18 m
Maximum printable cut-sheet media length	1.6 m			INA
Maximum media thickness	Roll/cut: 0.07-0.8 mm			Roll: 0.08-0.5 mm; Cut: 0.08-1.5 mm
Maximum media width	44"			44"
Media loading	Front			Top Rear
Roll paper	Multifunction Roll System (dual roll and/or bi-directional auto Take up configuration)	✓		Single Roll; Auto Take Up Reel Unit option
Optional media handling	Roll holder set (supports 2" and 3" media cores)			Roll media adapter (supports and 2" and 3" media core)
Standard RAM	3 GB	✓		2 GB
Maximum RAM	3 GB	✓		2 GB
Hard drive	Standard self-encrypting 500-GB	✓		Optional self-encrypting 320-GB
Interface	Hi Speed USB; 10/100Base-TX/1000Base-T/TX; Wireless LAN: 802.2.11 b/g/n	✓		100Base-TX/1000Base-T, Super-speed USB 3.0
PDL	SG Raster; PDF Ver. 1.7; JPEG (Ver. JFIF 1.02)	✓		ESC/P-R (optional Adobe PostScript 3)
Net weight (unpacked) and size	124 kg 1,593 x 984 x 1,168 mm (W x D x H; basket open)	✓		153.8 kg 1,909 x 2,211 x 1,218 mm (W x D x H; basket open)
Power consumption when in standby	2.3 W or less	✓		3.4 W or less
Power consumption when active	85 W or less	✓		110 W or less

Acoustic pressure	Operation: 48 dB (A) or less			Operation: 49.5 dB (A) or less
Acoustic power	Operation: 6.5 Bels	✓		Operation: 7.5 Bels
Option to integrate with a spectrophotometer?	No		✓	Optional SpectroProofer with X-rite ILS30EP

INA – Information not available

Driver Feature Set

	Canon imagePROGRAF PRO-4600	Advantage		Epson SureColor SC-P9500
Speed settings	Standard, High, Highest, and Custom (with various settings depending on media selection)			Quality, High Quality, Max Quality, and Quality Options (with various settings from Speed to Quality available)
Economy mode	Yes (Custom Fast)			Yes (High Speed)
Predefined profiles	5 available under Easy Settings: Default; Photo (Color); Photo (Monochrome); Poster; Custom			5 (Photo, Fine Art, Proofing, Poster, and Other (2Page N-up)) with the ability to program more
Overview of profile settings provided	Yes			Yes
Media profiles	64 plus 10 custom profiles	✓		33
IQ optimized for various types of output	Yes			Yes
Watermark	Yes	✓		No
Sharpen text	No		✓	Yes (called Finest Detail)
Thicken fine lines	Yes			Yes (called Finest Detail)
Mirror image	Yes			Yes
Multi-up printing	Yes (2 to 16)	✓		Yes (2 to 4)
Poster print mode	Yes (2 by 2)		✓	Yes (4 by 4)
Page stamping	Yes (Under Layout and Page Options: Date, Time, Username, Page Number)		✓	Yes (Document Name, Username, Printer Name, Free Text Field, Media Type, Print Quality Level, Level, Print Mode, High Speed, Finest Detail, Edge Smoothing, Colour Adjustment, Colour Adj. Value, Colour Density)
Image rotation	Yes, 90 degrees and 180 degrees			Yes, Auto and 180 degrees
Option to preview before print	Yes			Yes
Link to device web server from driver	Yes (via link to Status Monitor)	✓		No (there is a link to Epson Status Monitor 3)
CMYK balance adjustment	Yes (CMY only)			Yes (CMY only)

Brightness adjustment	Yes			Yes
Contrast adjustment	Yes			Yes
Saturation adjustment	No		✓	Yes
Advanced colour management options	Yes			Yes
Enlargement Copy Mode	Yes			Yes
Free Layout Capability	Yes (flexible placement)			Yes (flexible placement via Layout Manager)
MS Office Plug-in	Yes			Yes
Adobe Photoshop Plug-in*	Yes			Yes
Accounting Capability	Yes			Yes
Disable automatic cutter	Yes			Yes
Unidirectional printing selection option	Yes			Yes (when the 'High Speed' feature is disabled)
Integration with MFP	Yes			INA

* The Canon PRO-4600 supports Professional Print & Layout (PPL) v.1.4 workflow software, which is designed to accentuate details in highlight areas and make in-focus areas stand out. It can be used as a standalone RIP or as an export module from industry-standard editing and graphics software such as Adobe Photoshop, Adobe Lightroom, as well as Canon Digital Photo Professional. The Epson unit supports Epson Print Layout which has a plug-in function for Adobe Photoshop and Adobe Lightroom, as well as Nikon ViewNX-I, Nikon NX Studio, and SILKYPIX.

Ink Consumption

Table 1: Amount of Ink in Each Canon imagePROGRAF PRO-4600 700-ml Cartridge (in Grams)

	PM	R	C	PGY	MBK	PBK	B	CO	GY	Y	M	PC
Weight of cartridge prior to installation	941.3	934.2	935.3	934.8	950.1	932.5	924.7	926.4	940.9	935.5	941.3	934.9
Weight of cartridge at end of life	207.4	207.4	207.4	207.4	207.4	207.4	207.4	207.4	207.4	207.4	207.4	207.4
Net weight of ink	733.9	726.8	727.9	727.4	742.7	725.1	717.3	719.0	733.5	728.1	733.9	727.5
Total ink weight across 12 cartridges												**8,743.1**

Table 2: Approximate Amount of Ink in Each Epson SureColor SC-P9500 350-ml Cartridge (in Grams)

	GY	VM	O	PBK	VLM	LGY	LC	Y	G	MBK	V	C
Weight of cartridge prior to installation	497.0	507.6	505.8	499.4	498.5	494.5	496.6	496.2	499.7	502.2	497.2	497.0
Weight of cartridge at end of life	137.5	137.5	137.5	137.5	137.5	137.5	137.5	137.5	137.5	137.5	137.5	137.5
Net weight of ink	359.5	370.1	368.3	361.9	361.0	357.0	359.1	358.7	362.2	364.7	359.7	359.5
Total ink weight across 12 cartridges												**4,341.7**

Table 3: Ink Used in Three 50-Page Runs of Packaging Proof Test Document (High Mode) on the Canon imagePROGRAF PRO-4600 (in Grams)

	PM	R	C	PGY	MBK	PBK	B	CO	GY	Y	M	PC
Test Run 1 Net weight of ink used	5.9	6.5	3.3	10.4	6.2	8.0	5.7	5.0	11.9	5.3	6.2	5.7
Test Run 2 Net weight of ink used	5.4	6.2	3.4	9.8	6.8	8.5	5.2	5.3	11.5	5.6	5.8	6.5
Test Run 3 Net weight of ink used	5.6	6.3	3.8	9.5	7.0	8.2	6.2	5.5	12.2	6.2	6.0	6.0
Average amount of ink used across three runs	5.6	6.3	3.5	9.9	6.7	8.2	5.7	5.3	11.9	5.7	6.0	6.1
Total ink weight across 12 cartridges for 50-page run (based on averages)												**80.9**

Table 4: Ink Used in Three 50-Page Runs of Packaging Proof Test Document (High Quality Mode) on the Epson SureColor SC-P9500 (in Grams)

	GY	VM	O	PBK	VLM	LGY	LC	Y	G	MBK	V	C
Test Run 1 Net weight of ink used	12.4	21.5	14.7	24.2	38.7	78.8	49.2	19.0	4.1	4.8	6.9	11.3
Test Run 2 Net weight of ink used	11.9	21.1	12.7	24.1	35.3	76.3	47.2	18.7	6.5	3.9	4.3	9.8
Test Run 3 Net weight of ink used	13.0	21.4	12.9	23.4	35.8	75.9	47.0	19.6	6.8	3.1	5.7	9.7
Average amount of ink used across three runs	12.4	21.3	13.4	23.9	36.6	77.0	47.8	19.1	5.8	3.9	5.6	10.3
Total ink weight across 12 cartridges for 50-page run (based on averages)												**277.1**

Table 5: Ink Used in Three 50-Page Runs of Retail Sales Poster Test Document (High mode) on the Canon imagePROGRAF PRO-4600 (in Grams)

	PM	R	C	PGY	MBK	PBK	B	CO	GY	Y	M	PC
Test Run 1 Net weight of ink used	7.3	5.0	5.0	13.8	8.1	7.4	5.3	6.0	8.4	6.6	6.7	7.3
Test Run 2 Net weight of ink used	7.4	5.8	5.4	14.4	8.8	7.5	5.1	5.6	9.8	6.0	6.0	8.6
Test Run 3 Net weight of ink used	7.9	5.6	5.8	13.5	7.7	7.7	5.7	6.1	9.4	6.7	7.6	8.2
Average amount of ink used across three runs	7.5	5.5	5.4	13.9	8.2	7.5	5.4	5.9	9.2	6.4	6.8	8.0
Total ink weight across 12 cartridges for 50-page run (based on averages)												**89.7**

Table 6: Ink Used in Three 50-Page Runs of Retail Sales Poster Test Document (High Quality Mode) on the Epson SureColor SC-P9500 (in Grams)

	GY	VM	O	PBK	VLM	LGY	LC	Y	G	MBK	V	C
Test Run 1 Net weight of ink used	5.9	27.0	19.6	2.8	42.8	36.8	20.6	9.0	18.6	9.4	13.9	5.3
Test Run 2 Net weight of ink used	5.3	26.9	19.7	2.6	41.9	36.9	20.1	8.6	17.8	8.7	13.1	5.5
Test Run 3 Net weight of ink used	5.9	26.7	19.4	2.5	42.5	36.8	20.9	8.7	17.7	8.8	13.3	5.7
Average amount of ink used across three runs	5.7	26.9	19.6	2.6	42.4	36.8	20.5	8.8	18.0	9.0	13.4	5.5
Total ink weight across 12 cartridges for 50-page run (based on averages)												**209.2**

Table 7: Ink Used in Three 50-Page Runs of Studio Portrait Test Document (High mode) on the Canon imagePROGRAF PRO-4600 (in Grams)

	PM	R	C	PGY	MBK	PBK	B	CO	GY	Y	M	PC
Test Run 1 Net weight of ink used	8.6	6.9	5.8	34.3	7.3	12.1	8.0	8.4	19.0	7.7	5.7	9.0
Test Run 2 Net weight of ink used	8.3	7.0	5.5	34.1	8.2	11.2	6.6	7.3	19.8	7.8	8.5	7.7
Test Run 3 Net weight of ink used	9.6	7.5	5.9	34.6	7.1	11.1	6.9	7.8	19.2	7.6	7.2	7.4
Average amount of ink used across three runs	8.8	7.1	5.7	34.3	7.5	11.5	7.2	7.8	19.3	7.7	7.1	8.0
Total ink weight across 12 cartridges for 50-page run (based on averages)												**132.0**

Table 8: Ink Used in Three 50-Page Runs of Studio Portrait Test Document (High Quality mode) on the Epson SureColor SC-P9500 (in Grams)

	GY	VM	O	PBK	VLM	LGY	LC	Y	G	MBK	V	C
Test Run 1 Net weight of ink used	12.5	6.6	6.9	9.8	31.4	141.2	23.8	8.2	8.3	3.7	4.1	4.0
Test Run 2 Net weight of ink used	12.6	6.0	5.7	10.0	31.2	139.7	24.8	9.4	6.5	4.3	3.3	3.9
Test Run 3 Net weight of ink used	11.9	6.1	5.9	9.8	30.9	140.9	23.5	7.6	6.1	3.2	4.0	3.7
Average amount of ink used across three runs	12.3	6.2	6.1	9.9	31.2	140.6	24.0	8.4	7.0	3.7	3.8	3.9
Total ink weight across 12 cartridges for 50-page run (based on averages)												**257.1**

Test Methodology

Ink Consumption: Keypoint Intelligence analyzed ink consumption using three different document types: a PDF-formatted Packaging Proof, a Retail Sales Poster (jpg), and a Studio Portrait (tiff), all sized at ISO A1.

In Keypoint Intelligence's lab, the Canon imagePROGRAF PRO-4600, with the latest "1.01" firmware (as of February 2024) was connected to a Windows 10 workstation via a 1000BaseT TCP/IP connection and maintained in default configuration for testing. Using the Canon imagePROGRAF Printer Driver in its default colour settings, the Packaging Proof was printed on Canon medium weight proofing media, the Retail Poster on 140gsm matte coated media, and the Studio Portrait on 280gsm semi-gloss photo media, all in High mode.

The Epson SureColor SC-P9500 was installed with the latest "03.39.LL0902" level of firmware (as of February 2024) and connected to a Windows 10 workstation via a 1000BaseT TCP/IP connection and maintained in default configuration for testing. Using the Epson ESC/P-R driver in default colour settings, the Packaging Proof document was printed on proofing paper commercial media, the Retail Poster on doubleweight matte coated media, and the Studio Portrait on Epson 250gsm semi-gloss photo media, all in High Quality mode.

Lab technicians weighed each ink cartridge before installation (with the weight of each ink with all packaging removed recorded) and after every 50-print test run, calculating the weight of ink used for each colour. To account for the Canon model's sub-tank, a procedure was followed to ensure that the sub-tank level was at its maximum before the print run commenced and again after the print run was completed, thereby ensuring that ink replenishment of the sub-tanks was taken into account for each print run.

For both models, one cartridge was then run to exhaustion and the weight of the empty cartridge was recorded.

Test Environment: Products were tested in Keypoint Intelligence's environmentally controlled UK test lab, which replicates typical office conditions.

Test Equipment: Keypoint Intelligence's dedicated test network in Europe, consisting of Windows 10 Professional workstations, 10/100/1000BaseTX network switches and CAT5e/6 cabling.

Test Procedures: Keypoint Intelligence employs proprietary procedures and industry-standard test procedures in its lab test methods. In addition to a number of proprietary test documents, Keypoint Intelligence uses industry-standard files including an ASTM monochrome test document for evaluating black image quality.

Alongside a visual observation, colour print quality and gamut size are evaluated using XRite i1 profile software and an i1 Pro colour spectrophotometer and analysed using i1i0 Advanced Scanning Table. Density of black and colour output was measured using XRite 508 and XRite exact^{Xp} densitometers.

About Keypoint Intelligence

For over 60 years, clients in the digital imaging industry have relied on Keypoint Intelligence for independent hands-on testing, lab data, and extensive market research to drive their product and sales success. Keypoint Intelligence has been recognized as the industry's most trusted resource for unbiased information, analysis, and awards due to decades of analyst experience. Customers have harnessed this mission-critical knowledge for strategic decision-making, daily sales enablement, and operational excellence to improve business goals and increase bottom lines. With a central focus on clients, Keypoint Intelligence continues to evolve as the industry changes by expanding offerings and updating methods, while intimately understanding and serving manufacturers', channels', and their customers' transformation in the digital printing and imaging sector.

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