



**Análise do custo de tinta por página
Brasil**

Outubrode 2008

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Resumo e escopo da análise

Há mais de 20 anos a QualityLogic Inc. desenvolve e fornece soluções de teste essenciais para empresas que criam, montam ou compram impressoras e tecnologia de impressão. Nossos produtos e serviços ajudam o cliente a manter a conformidade dos produtos que eles mesmos fabricam ou compram às especificações do mercado e a compará-los a implementações de referência ou a produtos da concorrência. Somos associados a organizações de padrões internacionais, como a ISO e a Ecma International, e prestamos assistência aos principais periódicos de tecnologia que publicam testes e avaliações de impressoras.

A pedido da Eastman Kodak Company, a QualityLogic calculou e comparou o custo de tinta por página das impressoras EASYSHARE ESP-3 e ESP-5 All-in-One ao de impressoras concorrentes selecionadas pela Kodak. O objetivo da Kodak foi selecionar impressoras de grandes fabricantes com participação significativa no mercado.

O rendimento dos cartuchos de tinta monocromáticos e coloridos de todas as impressoras testadas foi determinado de acordo com os padrões ISO; o rendimento em qualidade fotográfica foi determinado por meio da metodologia de rendimento fotográfico elaborada pela QualityLogic*.

IOs preços dos cartuchos das impressoras testadas foram fornecidos à QualityLogic pela Kodak** e têm como base o preço de varejo do cartucho sugerido pelo fabricante para o Brasil. No presente relatório, somente cartuchos padrão no formato de venda ao consumidor ou cartuchos de tinta de rendimento padrão com preço de embalagem unitária foram avaliados para fins de comparação entre impressoras (ou seja, não foram usados pacotes de várias unidades, alto rendimento, pacotes combinados ou promoções especiais).

Embora o custo total de propriedade seja composto por vários fatores, o custo de tinta por página é um fator importante na avaliação do custo total de propriedade de sistemas de impressão.

O custo de tinta por página foi calculado dividindo-se esses preços de cartucho pelo rendimento de cada cartucho testado

* Todas as menções a 'fotografia' neste relatório se referem a fotografias sem borda, de aproximadamente 10 x 15 cm.

** A Kodak acredita na precisão das informações de preço fornecidas; no entanto, a empresa não se responsabiliza por erros, imprecisões ou variações causadas por alterações ocorridas fora do período definido da pesquisa (maio a julho de 2008).

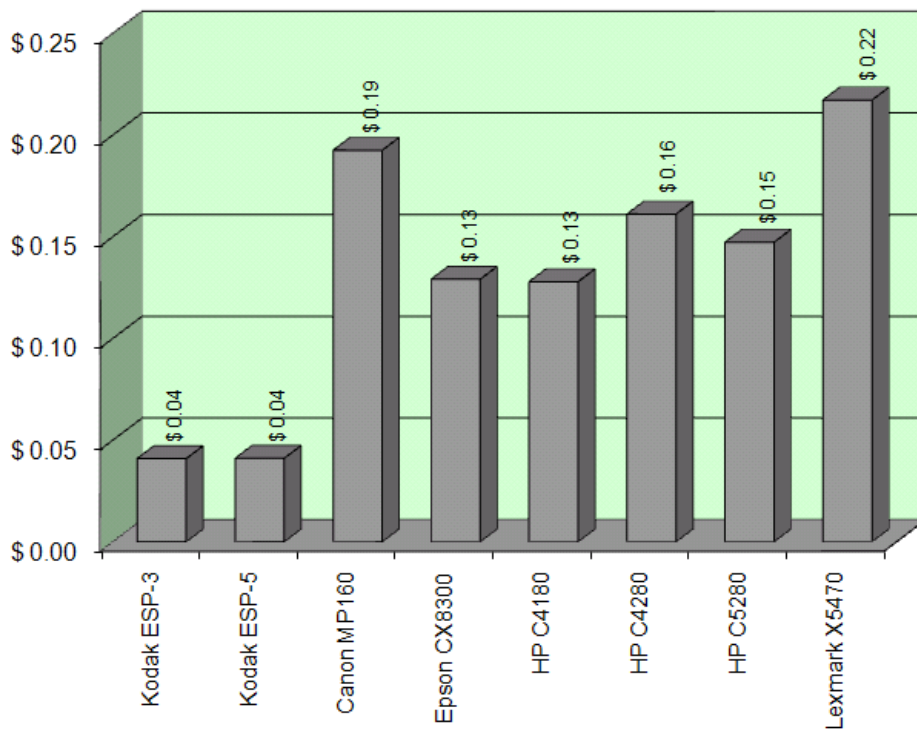
As seguintes impressoras e seus cartuchos de tinta correspondentes foram incluídos nesta avaliação de custo de tinta por página:

Fabricante	Impressora	Cartuchos
Kodak	ESP-3 ESP-5	Color Ink Cartridge 10, Black Ink Cartridge 10 Color Ink Cartridge 10, Black Ink Cartridge 10
Canon	Canon Pixma MP160	PG-40, CL-41
Epson	Epson Stylus CX8300	T0731, T0732, T0733, T0734
Hewlett-Packard	Photosmart C4180 Photosmart C4280 Photosmart C5280	HP98, HP93 HP74, HP75 HP74, HP75
Lexmark	X5470	18C0032, 18C0033

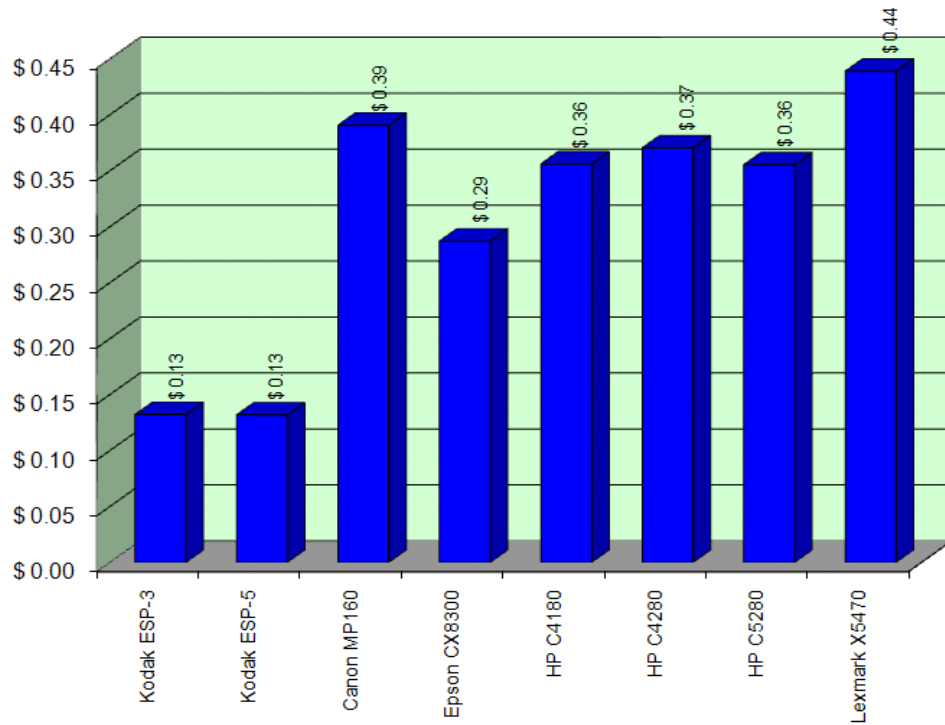
Custo de tinta por página

Os gráficos abaixo resumem o custo de tinta por página das impressoras testadas, com preços de cartucho praticados no Brasil. São apresentados gráficos para três tipos de impressão: monocromática, colorida e fotográfica. Os detalhes do cálculo dos custos podem ser encontrados na seção "Metodologia para o cálculo do custo de tinta por página", após os gráficos. Todos os preços são indicados em Reais

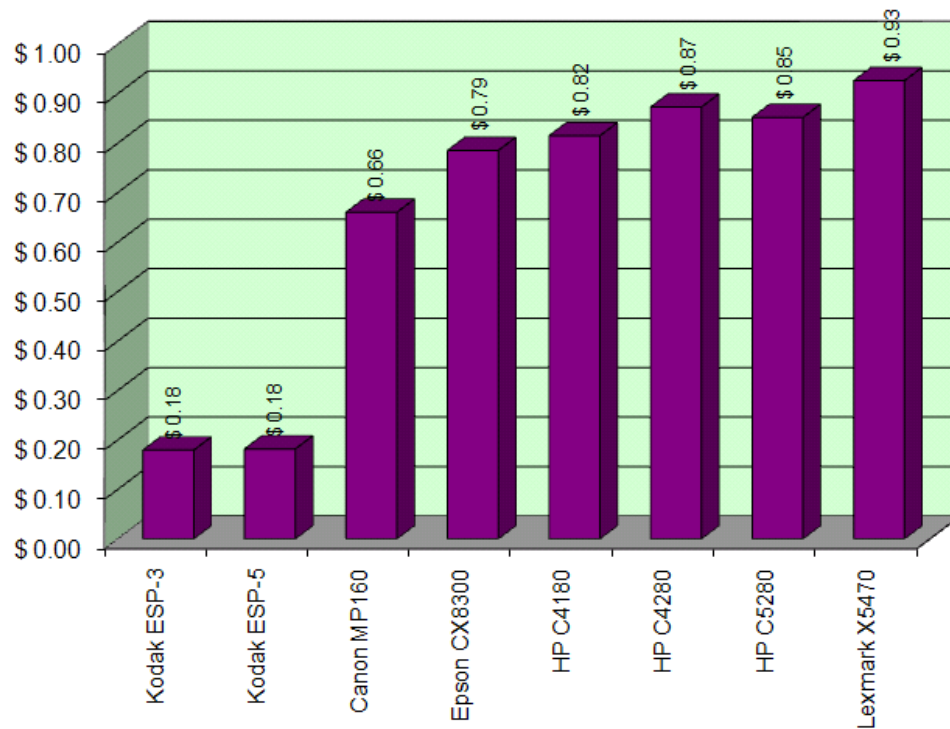
Brasil: Monocromática - Custo de tinta por página



Brasil: Colorida - Custo de tinta por página



Brasil: Fotográfica - Custo de tinta por página



Resultados de teste e informações de custo fornecidos pela QualityLogic. Os testes foram realizados sob condições laboratoriais; os resultados dos usuários finais podem apresentar variações. Os resultados de teste, os preços dos cartuchos de tinta e o custo por página estão sujeitos a alteração pela QualityLogic sem prévia comunicação. Todos os resultados de testes e informações de custo são fornecidos "na presente forma" e "conforme a disponibilidade", ficando afastada toda e qualquer garantia expressa ou implícita. Os usuários das informações aqui contidas assumem a plena responsabilidade e o risco de perda resultante do uso das referidas informações.

Metodologia para o cálculo do custo de tinta por página

Detalhamos abaixo as etapas usadas pela QualityLogic para executar este teste de custo de tinta por página para a Kodak, por meio de metodologias de teste de rendimento padronizados e informações de preço de cartucho de tinta fornecidas pela própria Kodak.

A. Declarações de rendimento da QualityLogic

O teste de rendimento é o processo pelo qual as impressoras avaliadas são operadas com seus cartuchos até exaurirem a quantidade de tinta/toner. Em seguida, são contadas as páginas impressas para se determinar o número de páginas que cada cartucho produz. Os requisitos e as condições operacionais do teste são determinados por um conjunto padrão de critérios de avaliação que oferecerão um resultado objetivo e repetível.

A QualityLogic é a líder mundial em serviços de testes de rendimento. Apoiamos e seguimos os padrões ISO (International Standards Organization) para testes monocromáticos e coloridos. O uso de padrões ISO em testes de rendimento também é aceito pelos principais fabricantes, como Canon, Dell, Epson, HP, IBM, Kodak, Lexmark, Oki Data, Pitney Bowes, Ricoh, Toshiba, Xerox, e outros.

A ISO atualmente trabalha na definição de um padrão para tinta de qualidade fotográfica. Enquanto esse padrão não for lançado, a QualityLogic utilizará uma metodologia desenvolvida por si própria que segue rigorosamente os padrões ISO atuais.

As principais disposições desses padrões incluem:

- Conjuntos de testes padrão
- Mínimo de nove cartuchos em três impressoras que representem os produtos do mercado aberto
- Critérios de vida útil claros e objetivos
- Ambiente de teste controlado – temperatura, umidade, impressão contínua
- Requisito de relatório de rendimento bem definido

As páginas seguintes contêm tabelas referentes aos resultados do teste de rendimento. As tabelas mostram o número de páginas por cartucho que o usuário pode esperar com 90% de confiança com base no nosso teste. Os números em preto indicam os cartuchos principais - o cartucho pertencente ao grupo de nove cartuchos que pode ser exaurido em três impressoras. Cartuchos complementares são indicados em vermelho e representam os cartuchos secundários ao objetivo do teste. Embora os cartuchos complementares não sejam o foco principal dos testes, eles são incluídos nos relatórios de teste para assegurar que uma maior compreensão da tinta usada.

Geralmente, os cartuchos "principais" de cada categoria de teste são:

- Tinta monocromática – cartucho preto
- Tinta colorida – todos os cartuchos de densidade plena contendo ciano, magenta ou amarelo
- Tinta fotográfica – cartuchos coloridos ou outros nos quais os nove cartuchos foram exauridos

A QualityLogic realizou testes de rendimento e produziu relatórios de teste de rendimento sobre todos os cartuchos dos modelos listados abaixo (alguns modelos também estão disponíveis na Europa e na América do Norte). Cada tabela traz subcabeçalhos abreviados que representam os tipos de cartucho de tinta específicos, da seguinte forma:

CMY = um único cartucho contém ciano, magenta e amarelo *
 C = Ciano
 M = Magenta
 Y = Amarelo
 K1 = Preto
 K2 = Um segundo cartucho preto
 LC = Ciano claro
 LM = Magenta claro

Esses números referentes ao rendimento se aplicam a todas as impressoras incluídas na análise. Os rendimentos dos cartuchos principais e complementares são reportados, e os detalhes desses resultados podem ser encontrados no Apêndice C.

	Mono Ink yield							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP 3	4313				555			
Kodak ESP 5	4395				551			
Canon MP160	2411				360			
Epson CX8300		1465	2114	2312	247			
HP C4180	3908				428			
HP C4280	979				201			
HP C5280	1016				224			
Lexmark X5470	2504				287			

* Cartucho de cor do Kodak inclui tinta preta e tinta protetora

	Color Ink yield							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP 3	379				340			
Kodak ESP 5	379				342			
Canon MP160	324				332			
Epson CX8300		390	289	411	245			
HP C4180	206				399			
HP C4280	166				186			
HP C5280	169				203			
Lexmark X5470	272				274			

* Cartucho de cor do Kodak inclui tinta preta e tinta protetora

	Photo Ink yield							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP 3	173				1509			
Kodak ESP 5	172				1371			
Canon MP160	110				1786			
Epson CX8300		85	86	114	468			
HP C4180	60				2675			
HP C4280	47				1002			
HP C5280	48				1154			
Lexmark X5470	71				4378			

* Cartucho de cor do Kodak inclui tinta preta e tinta protetora

B. Preços de cartucho de tinta

Os preços de cartucho usados nesta análise de custo de tinta por página foram pesquisados e fornecidos à QualityLogic pela Kodak em julho de 2008. Somente cartuchos padrão no formato de venda ao consumidor ou cartuchos de tinta de rendimento padrão com preço de embalagem unitária foram avaliados para fins de comparação entre impressoras (ou seja, não foram usados pacotes de várias unidades, alto rendimento, pacotes combinados ou promoções especiais). Veja abaixo um exemplo dos cartuchos de tinta e seus respectivos preços. Todos os preços são indicados em Reais

	Ink Cartridge Pricing							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP-3	\$ 28.90				\$ 19.00			
Kodak ESP-5	\$ 28.90				\$ 19.00			
Canon MP160	\$ 69.00				\$ 59.00			
Epson CX8300		\$ 22.90	\$ 22.90	\$ 22.90	\$ 22.90			
HP C4180	\$ 47.80				\$ 49.50			
HP C4280	\$ 39.90				\$ 24.20			
HP C5280	\$ 39.90				\$ 24.20			
Lexmark X5470	\$ 64.90				\$ 54.90			

Fonte: Kodak
Moeda: Reais

C. Custo de tinta por página – Por cartucho

Na etapa seguinte, a QualityLogic calculou o custo de tinta por página por cartucho dividindo o preço de cada cartucho (conforme definido pelo preço de cartucho localizado da Kodak, indicado na Seção B acima) pelo rendimento de cada um em cada modelo (conforme definido na Seção A acima). Teste cálculo resulta no custo de tinta por página por cartucho para cada modo de teste: monocromático, colorido e fotográfico.

$$\frac{\text{Preço por cartucho}}{\text{Rendimento da tinta (em número de páginas/fotos)}} = \text{Custo de tinta por página – Por cartucho}$$

Custo de tinta por cartucho individual por página (Brasil)

	Mono Ink Cost							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP-3	\$ 0.01				\$ 0.03			
Kodak ESP-5	\$ 0.01				\$ 0.03			
Canon MP160	\$ 0.03				\$ 0.16			
Epson CX8300		\$ 0.02	\$ 0.01	\$ 0.01	\$ 0.09			
HP C4180	\$ 0.01				\$ 0.12			
HP C4280	\$ 0.04				\$ 0.12			
HP C5280	\$ 0.04				\$ 0.11			
Lexmark X5470	\$ 0.03				\$ 0.19			

Reais

Custo de tinta por cartucho individual por página

	Color Ink cost							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP-3	\$ 0.08				\$ 0.06			
Kodak ESP-5	\$ 0.08				\$ 0.06			
Canon MP160	\$ 0.21				\$ 0.18			
Epson CX8300		\$ 0.06	\$ 0.08	\$ 0.06	\$ 0.09			
HP C4180	\$ 0.23				\$ 0.12			
HP C4280	\$ 0.24				\$ 0.13			
HP C5280	\$ 0.24				\$ 0.12			
Lexmark X5470	\$ 0.24				\$ 0.20			

Reais

	Photo Ink Cost							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP-3	\$ 0.17				\$ 0.01			
Kodak ESP-5	\$ 0.17				\$ 0.01			
Canon MP160	\$ 0.63				\$ 0.03			
Epson CX8300		\$ 0.27	\$ 0.27	\$ 0.20	\$ 0.05			
HP C4180	\$ 0.80				\$ 0.02			
HP C4280	\$ 0.85				\$ 0.02			
HP C5280	\$ 0.83				\$ 0.02			
Lexmark X5470	\$ 0.91				\$ 0.01			

Reais

D. Custo de tinta por página

O custo de tinta por página de cada impressora é calculado somando-se o custo de tinta por página de cada cartucho testado em um dado modelo de impressora (conforme determinado na Seção C acima).

Custo de tinta por página = CMY + C + M + Y + K1 + K2 + LC + LM

O custo de tinta por página por impressora é refletido abaixo. Note que devido ao arredondamento o custo de tinta por página total poderá não corresponder aos custos de cartuchos de tinta individuais.

Custo de tinta por cartucho individual e custo total de tinta por página

	Mono Ink Cost								Mono ColIPP
	CMY	C	M	Y	K1	K2	LC	LM	
Kodak ESP-3	\$ 0.01				\$ 0.03				\$ 0.04
Kodak ESP-5	\$ 0.01				\$ 0.03				\$ 0.04
Canon MP160	\$ 0.03				\$ 0.16				\$ 0.19
Epson CX8300		\$ 0.02	\$ 0.01	\$ 0.01	\$ 0.09				\$ 0.13
HP C4180	\$ 0.01				\$ 0.12				\$ 0.13
HP C4280	\$ 0.04				\$ 0.12				\$ 0.16
HP C5280	\$ 0.04				\$ 0.11				\$ 0.15
Lexmark X5470	\$ 0.03				\$ 0.19				\$ 0.22

Reais

	Color Ink cost								Color ColIPP
	CMY	C	M	Y	K1	K2	LC	LM	
Kodak ESP-3	\$ 0.08				\$ 0.06				\$ 0.13
Kodak ESP-5	\$ 0.08				\$ 0.06				\$ 0.13
Canon MP160	\$ 0.21				\$ 0.18				\$ 0.39
Epson CX8300		\$ 0.06	\$ 0.08	\$ 0.06	\$ 0.09				\$ 0.29
HP C4180	\$ 0.23				\$ 0.12				\$ 0.36
HP C4280	\$ 0.24				\$ 0.13				\$ 0.37
HP C5280	\$ 0.24				\$ 0.12				\$ 0.36
Lexmark X5470	\$ 0.24				\$ 0.20				\$ 0.44

Reais

	Photo Ink Cost								Photo ColIPP
	CMY	C	M	Y	K1	K2	LC	LM	
Kodak ESP-3	\$ 0.17				\$ 0.01				\$ 0.18
Kodak ESP-5	\$ 0.17				\$ 0.01				\$ 0.18
Canon MP160	\$ 0.63				\$ 0.03				\$ 0.66
Epson CX8300		\$ 0.27	\$ 0.27	\$ 0.20	\$ 0.05				\$ 0.79
HP C4180	\$ 0.80				\$ 0.02				\$ 0.82
HP C4280	\$ 0.85				\$ 0.02				\$ 0.87
HP C5280	\$ 0.83				\$ 0.02				\$ 0.85
Lexmark X5470	\$ 0.91				\$ 0.01				\$ 0.93

Reais

Informações de contato

Para obter informações sobre esta avaliação de custo de tinta por página, entre em contato com as seguintes pessoas:

QualityLogic:



Dave Jollota
Presidente, Grupo de Soluções de Teste de Imagem
Telefone: +1-805-531-9030 x122
djollota@qualitylogic.com

Don Moreaux
O diretor de Operações, Serviços de prova
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dmoreaux@qualitylogic.com
Address: 5401 Tech Circle, Moorpark, CA, 93021-1793 USA

Resultados de teste e informações de custo fornecidos pela QualityLogic. Os testes foram realizados sob condições laboratoriais; os resultados dos usuários finais podem apresentar variações. Os resultados de teste, os preços dos cartuchos de tinta e o custo por página estão sujeitos a alteração pela QualityLogic sem prévia comunicação. Todos os resultados de testes e informações de custo são fornecidos "na presente forma" e "conforme a disponibilidade", ficando afastada toda e qualquer garantia expressa ou implícita. Os usuários das informações aqui contidas assumem a plena responsabilidade e o risco de perda resultante do uso das referidas informações.



Cost of Ink Per Page Analysis Brazil

October 2008

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Summary and Scope of Analysis

For more than 20 years, QualityLogic Inc. has been a premier developer and provider of essential testing solutions to companies that design, build, or purchase printers and printing technology. Our products and services help our customers understand how the products they make or buy conform to specifications, or compare to reference implementations or competing products. We are active members of international standards organizations including ISO and Ecma International, and provide testing assistance to leading technology publications who publish printer reviews.

At the request of Eastman Kodak Company, QualityLogic calculated and compared the Cost of Ink Per Page (CoIPP) of the EASYSHARE ESP-3 and ESP-5 All-in-One Printers to competing printers selected by Kodak. Kodak's intent was to select printers with significant market share from leading manufacturers.

Monochrome and color cartridge yields for all printers were determined following ISO yield standards, and photo yields were determined using QualityLogic's photo yield methodology*.

Ink prices from for printers in the test were provided to QualityLogic by Kodak** and are based on the manufacturer's suggested retail price (MSRP) for each of the cartridges in Brazil. For this report, only standard as-shipped-in-box cartridges or the standard-yield ink cartridges in single quantity pricing (i.e., no multi-packs, high yield, combo packs, value packs or special promotions) were evaluated for the purpose of making like-basis comparisons between all printers.

Although there are many factors in total cost of ownership, Cost of Ink Per Page (CoIPP) is an important factor when evaluating total cost of ownership with printer systems.

Cost of Ink Per Page was calculated by dividing these cartridge prices by the yield of each cartridge in the test.

* All references to 'photo' in this report refer to 4x6 inch (approximately 10 x 15 cm) borderless photos.

** Kodak believes that the list pricing information provided is accurate; however, it is not responsible for any errors, inaccuracies, or variances caused by changes made outside of its defined survey period (May-July 2008).

Test results and cost information provided by QualityLogic. Tests were performed under laboratory conditions and end-user's results may vary. Test results, ink cartridge pricing and cost per page pricing subject to change without notice by QualityLogic. All test results and cost information are provided "as-is," "as available," and all warranties, expressed or implied are hereby disclaimed. Users of the information contained herein assume full responsibility and risk of loss resulting from usage thereof.

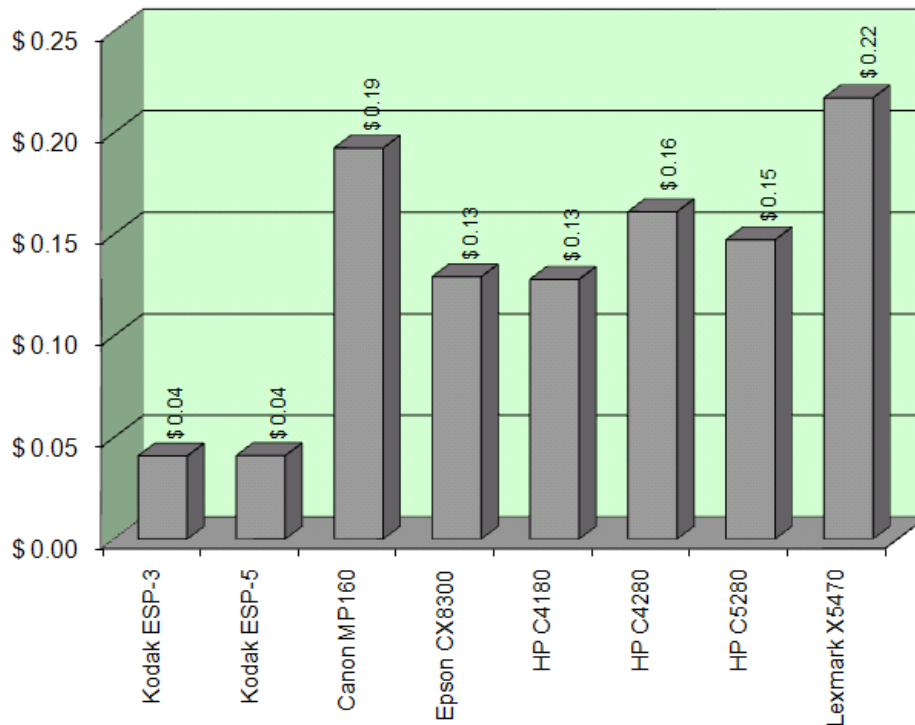
The following printers and corresponding ink cartridges were included in this Cost of Ink Per Page analysis:

Company	Printer	Cartridges
Kodak	ESP-3 ESP-5	Color Ink Cartridge 10, Black Ink Cartridge 10 Color Ink Cartridge 10, Black Ink Cartridge 10
Canon	Canon Pixma MP160	PG-40, CL-41
Epson	Epson Stylus CX8300	T0731, T0732, T0733, T0734
Hewlett-Packard	Photosmart C4180 Photosmart C4280 Photosmart C5280	HP98, HP93 HP74, HP75 HP74, HP75
Lexmark	X5470	18C0032, 18C0033

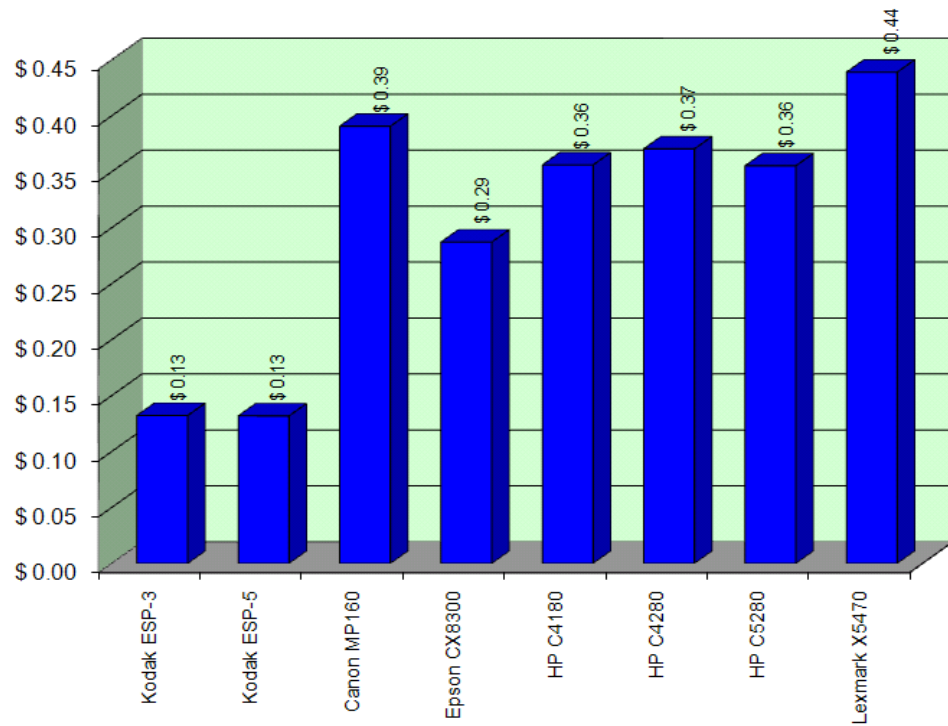
Cost of Ink Per Page

The following charts summarize the Cost of Ink Per Page for the printers tested using cartridge prices from Brazil. There are three charts presented: monochrome, color and photo printing. Details of how these costs were calculated can be found in the "Methodology for Calculation of Cost of Ink Per Page" following these graphs. All pricings show in Brazilian Reais currency

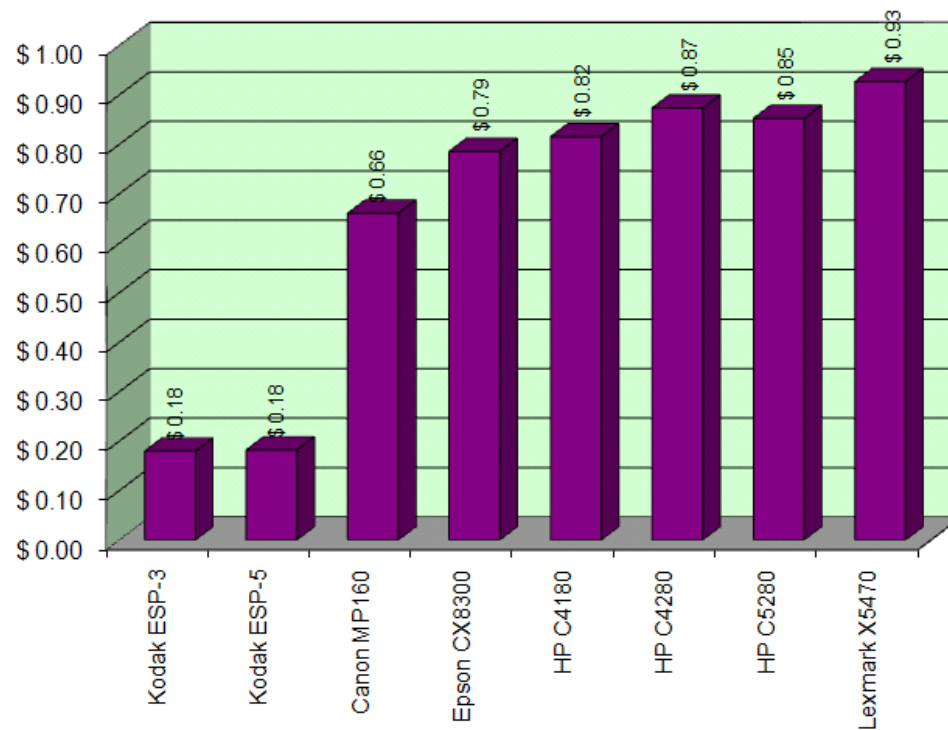
Brazil: Mono - Cost of Ink Per Page



Brazil: Color - Cost of Ink Per Page



Brazil: Photo - Cost of Ink Per Page



Resultados de teste e informações de custo fornecidos pela QualityLogic. Os testes foram realizados sob condições laboratoriais; os resultados dos usuários finais podem apresentar variações. Os resultados de teste, os preços dos cartuchos de tinta e o custo por página estão sujeitos a alteração pela QualityLogic sem prévia comunicação. Todos os resultados de testes e informações de custo são fornecidos "na presente forma" e "conforme a disponibilidade", ficando afastada toda e qualquer garantia expressa ou implícita. Os usuários das informações aqui contidas assumem a plena responsabilidade e o risco de perda resultante do uso das referidas informações.

Methodology for Calculation of Cost of Ink Per Page

The following is a step-by-step outline of how QualityLogic, using standardized yield testing methodologies and ink cartridge pricing information provided by Kodak, executed this 'Cost of Ink Per Page' test for Kodak.

A. QualityLogic Yield Declarations

Yield testing is a process by which the target printers are operated with their ink or toner cartridges to exhaust the amount of ink/toner, and then pages printed are counted to determine the number of pages each cartridge yields. The requirements and operating conditions of such testing are determined by a standard set of testing criteria that will provide an objective and repeatable result.

QualityLogic is a leader worldwide in providing yield testing services. We support and follow the ISO (International Standards Organization) standards for mono and color testing. Use of the ISO standards for yield testing is also supported by leading manufacturers, including Canon, Dell, Epson, HP, IBM, Kodak, Lexmark, Oki Data, Pitney Bowes, Ricoh, Toshiba, Xerox, and others.

ISO is currently working on a standard for photo ink. Until this standard is released, QualityLogic uses a methodology we developed that closely follows the current ISO standards approach.

Key provisions of these standards include:

- Standard test suites
- Minimum of nine cartridges across three printers representative of products in open market
- Clear, objective end-of-life criteria
- Controlled test environment – temperature, humidity, continuous printing
- Yield reporting requirement well defined

The following pages contain tables that relate to yield testing results. The tables show the number of pages per cartridge that can be expected with 90 percent confidence based on our testing. Numbers in black indicate primary cartridges – any cartridge where a minimum of nine cartridges across three printers could be exhausted. Supplemental cartridges are indicated by red numbers and represent those cartridges that are secondary to the purpose of the test. Although supplemental cartridges are not the key focus in the tests as shown, they are included in the test reports to ensure we get a complete understanding of the ink being used.

Generally, the 'primary' cartridges for each category of testing are:

- Mono ink – the black cartridge
- Color ink – all full density cartridges containing cyan, magenta, or yellow
- Photo ink – color cartridges or others where nine cartridges were exhausted

QualityLogic performed yield tests and provided yield test reports for all cartridges for models listed below (with some of the same models also available in Europe and in North America). Each table has abbreviated sub-headings that represent the specific ink cartridge types as follows:

- CMY = A single cartridge containing cyan, magenta and yellow *
- C = Cyan
- M = Magenta
- Y = Yellow
- K1 = Black
- K2 = A second black cartridge
- LC = Light cyan
- LM = Light magenta

These yield numbers apply to all printers included in this analysis. Yields of primary and supplemental cartridges are reported, and the details of these results can be found in Appendix C.

	Mono Ink yield							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP 3	4313				555			
Kodak ESP 5	4395				551			
Canon MP160	2411				360			
Epson CX8300		1465	2114	2312	247			
HP C4180	3908				428			
HP C4280	979				201			
HP C5280	1016				224			
Lexmark X5470	2504				287			

* Kodak's color cartridge includes black ink and protective ink

	Color Ink yield							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP 3	379				340			
Kodak ESP 5	379				342			
Canon MP160	324				332			
Epson CX8300		390	289	411	245			
HP C4180	206				399			
HP C4280	166				186			
HP C5280	169				203			
Lexmark X5470	272				274			

* Kodak's color cartridge includes black ink and protective ink

	Photo Ink yield							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP 3	173				1509			
Kodak ESP 5	172				1371			
Canon MP160	110				1786			
Epson CX8300		85	86	114	468			
HP C4180	60				2675			
HP C4280	47				1002			
HP C5280	48				1154			
Lexmark X5470	71				4378			

* Kodak's color cartridge includes black ink and protective ink

B. Ink Cartridge Pricing

Cartridge prices used in this Cost of Ink Per Page analysis were researched and provided to QualityLogic by Kodak as of July 2008. Only standard as-shipped-in-box cartridges or the standard-yield ink cartridges in single quantity pricing (i.e., no multi-packs, high yield, combo packs, value packs or special promotions) were evaluated for the purpose of making like-basis comparisons between all printers. Below is an example of the ink cartridges and their individual prices. All pricing shown are in Brazilian Reais

	Ink Cartridge Pricing							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP-3	\$ 28.90				\$ 19.00			
Kodak ESP-5	\$ 28.90				\$ 19.00			
Canon MP160	\$ 69.00				\$ 59.00			
Epson CX8300		\$ 22.90	\$ 22.90	\$ 22.90	\$ 22.90			
HP C4180	\$ 47.80				\$ 49.50			
HP C4280	\$ 39.90				\$ 24.20			
HP C5280	\$ 39.90				\$ 24.20			
Lexmark X5470	\$ 64.90				\$ 54.90			

Source: Kodak
Currency: Brazilian Reais

C. Cost of Ink Per Page – Per Cartridge

QualityLogic then calculated the Cost of Ink Per Page per cartridge by dividing the price of each cartridge (as defined by Kodak's localized cartridge price, noted above in Section B) by the yield for each cartridge in each model (as defined above in Section A). This calculation results in the Cost of Ink Per Page per cartridge for each test mode: mono, color and photo.

$$\frac{\text{Price per cartridge}}{\text{Ink yield (in number of pages/photos)}} = \text{Cost of Ink Per Page – per cartridge}$$

Cost of Ink Per Individual Cartridge per Page (Brazil)

	Mono Ink Cost							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP-3	\$ 0.01				\$ 0.03			
Kodak ESP-5	\$ 0.01				\$ 0.03			
Canon MP160	\$ 0.03				\$ 0.16			
Epson CX8300		\$ 0.02	\$ 0.01	\$ 0.01	\$ 0.09			
HP C4180	\$ 0.01				\$ 0.12			
HP C4280	\$ 0.04				\$ 0.12			
HP C5280	\$ 0.04				\$ 0.11			
Lexmark X5470	\$ 0.03				\$ 0.19			

Brazilian Reais

Cost of Ink Per individual Cartridge per Page

	Color Ink cost							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP-3	\$ 0.08				\$ 0.06			
Kodak ESP-5	\$ 0.08				\$ 0.06			
Canon MP160	\$ 0.21				\$ 0.18			
Epson CX8300		\$ 0.06	\$ 0.08	\$ 0.06	\$ 0.09			
HP C4180	\$ 0.23				\$ 0.12			
HP C4280	\$ 0.24				\$ 0.13			
HP C5280	\$ 0.24				\$ 0.12			
Lexmark X5470	\$ 0.24				\$ 0.20			

Brazilian Reais

	Photo Ink Cost							
	CMY	C	M	Y	K1	K2	LC	LM
Kodak ESP-3	\$ 0.17				\$ 0.01			
Kodak ESP-5	\$ 0.17				\$ 0.01			
Canon MP160	\$ 0.63				\$ 0.03			
Epson CX8300		\$ 0.27	\$ 0.27	\$ 0.20	\$ 0.05			
HP C4180	\$ 0.80				\$ 0.02			
HP C4280	\$ 0.85				\$ 0.02			
HP C5280	\$ 0.83				\$ 0.02			
Lexmark X5470	\$ 0.91				\$ 0.01			

Brazilian Reais

D. Cost of Ink Per Page

Cost of Ink Per Page for each printer is calculated by summing the Cost of Ink Per Page per cartridge for each cartridge tested in a given printer model (as determined above in Section C).

$$\text{Cost of Ink Per Page} = \text{CMY} + \text{C} + \text{M} + \text{Y} + \text{K1} + \text{K2} + \text{LC} + \text{LM}$$

The Cost of Ink Per Page per printer is reflected below. Note that, due to rounding, the total ColIPP may not match the individual ink cartridge costs.

Cost of Ink Per Individual Cartridge and Total Cost of Ink Per Page

	Mono Ink Cost								Mono
	CMY	C	M	Y	K1	K2	LC	LM	ColIPP
Kodak ESP-3	\$ 0.01				\$ 0.03				\$ 0.04
Kodak ESP-5	\$ 0.01				\$ 0.03				\$ 0.04
Canon MP160	\$ 0.03				\$ 0.16				\$ 0.19
Epson CX8300		\$ 0.02	\$ 0.01	\$ 0.01	\$ 0.09				\$ 0.13
HP C4180	\$ 0.01				\$ 0.12				\$ 0.13
HP C4280	\$ 0.04				\$ 0.12				\$ 0.16
HP C5280	\$ 0.04				\$ 0.11				\$ 0.15
Lexmark X5470	\$ 0.03				\$ 0.19				\$ 0.22

Brazilian Reais

	Color Ink cost								Color
	CMY	C	M	Y	K1	K2	LC	LM	ColIPP
Kodak ESP-3	\$ 0.08				\$ 0.06				\$ 0.13
Kodak ESP-5	\$ 0.08				\$ 0.06				\$ 0.13
Canon MP160	\$ 0.21				\$ 0.18				\$ 0.39
Epson CX8300		\$ 0.06	\$ 0.08	\$ 0.06	\$ 0.09				\$ 0.29
HP C4180	\$ 0.23				\$ 0.12				\$ 0.36
HP C4280	\$ 0.24				\$ 0.13				\$ 0.37
HP C5280	\$ 0.24				\$ 0.12				\$ 0.36
Lexmark X5470	\$ 0.24				\$ 0.20				\$ 0.44

Brazilian Reais

	Photo Ink Cost								Photo
	CMY	C	M	Y	K1	K2	LC	LM	ColIPP
Kodak ESP-3	\$ 0.17				\$ 0.01				\$ 0.18
Kodak ESP-5	\$ 0.17				\$ 0.01				\$ 0.18
Canon MP160	\$ 0.63				\$ 0.03				\$ 0.66
Epson CX8300		\$ 0.27	\$ 0.27	\$ 0.20	\$ 0.05				\$ 0.79
HP C4180	\$ 0.80				\$ 0.02				\$ 0.82
HP C4280	\$ 0.85				\$ 0.02				\$ 0.87
HP C5280	\$ 0.83				\$ 0.02				\$ 0.85
Lexmark X5470	\$ 0.91				\$ 0.01				\$ 0.93

Brazilian Reais

Contact Information

For information regarding this Cost of Ink Per Page Analysis, please contact the following person/s:

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Appendices

Resultados de teste e informações de custo fornecidos pela QualityLogic. Os testes foram realizados sob condições laboratoriais; os resultados dos usuários finais podem apresentar variações. Os resultados de teste, os preços dos cartuchos de tinta e o custo por página estão sujeitos a alteração pela QualityLogic sem prévia comunicação. Todos os resultados de testes e informações de custo são fornecidos "na presente forma" e "conforme a disponibilidade", ficando afastada toda e qualquer garantia expressa ou implícita. Os usuários das informações aqui contidas assumem a plena responsabilidade e o risco de perda resultante do uso das referidas informações.

Appendix A: QualityLogic Declared Yield Test Results

The following data was extracted from the Yield Reports for each product tested. Complete reports are available from QualityLogic upon request.

ISO Test Results - Summary

Test Methodology

In order to obtain these yield results, two different methodologies were used in combination with three test suites. This section will detail the common areas between the methodologies, the differences between them, and highlight some key terms from ISO/IEC 24711, 24712, and 19752 that are particularly important to understand when reviewing these yield claims.

Common Methodology and Definitions

Number of Printers Tested	Minimum of three
Number of Cartridges Tested	Minimum of nine of each color
Temperature	Testing room average 23.0°C ± 2°C with all running average temperatures between 20.0°C and 26.0°C
Humidity	Testing room average 50% ± 10% RH with all running average RH readings between 35% and 65%
Fade	Phenomenon in which a significant reduction in uniformity occurs due to ink depletion
Ink Out	Signal generated by the printing system when the usable ink in the system is depleted and the printer stops printing
End of Life (EOL)	A condition determined by one of two mechanisms: fade or ink out (only if ink out stops printing)
Semi-Continuous Printing	Printing in a continuous manner, pausing only for intra-job servicing, printer calibrations, paper changes, breaks, and end of work days
Declared Cartridge Yield	Cartridge Yield (in pages) that is at or below the lower 90% confidence bound of the average yield
Estimated Supplemental Cartridge Yield	Estimated yield for a supplemental cartridge (real or estimated with use of a proxy) calculated with at least three cartridges
Average Supplemental Cartridge Yield	Average yield for a supplemental cartridge where EOL was reached on at least nine cartridges (three per printer)
Proxy Cartridge	A primary cartridge of the same physical size as a supplemental cartridge which had a starting weight within +/- 10% of the supplemental cartridge starting weight.

**Mono Ink Methodology and Definitions –
In accordance with ISO/IEC 24711, ISO/IEC 19752**

Test Suite	ISO/IEC 19752
Driver Set-up*	See Color Ink Methodology. In addition, if a "Black Only" or "Text Only" mode was available in the driver, it was enabled.
Paper	A4 or 8 ½" x 11" (see individual test reports)
Semi-Continuous Printing	Each copy of the test suite was printed as a separate one-page print job allowing for some intra-job servicing and calibration to take place
Primary Cartridge	The black cartridge or, if no black cartridge was present, the color cartridges that were used to develop composite black.
Supplemental Cartridge	Any installed cartridge except the full density black cartridge, including the full density Cyan, Magenta, and Yellow cartridges, as well as any photo cartridges
Individual Cartridge Yield	The number of test pages printed between cartridge installation and end of life

**Color Ink Methodology and Definitions –
In accordance with ISO/IEC 24711, ISO IEC 24712**

Test Suite	ISO/IEC 24712
Driver Set-up*	All image and print quality modifiers were set to their factory pre-set configuration for the printer and default installed condition for the driver. If auto media detection was available on the printer, it was disabled and media-type set to plain paper.
Paper	A4 or 8 ½" by 11" (see individual test reports)
Semi-Continuous Printing	Each copy of the test suite was printed as a separate five-page print job allowing for some intra-job servicing and calibration to take place
Primary Cartridge	Cartridge containing full density black, cyan, magenta, or yellow, or a combination of full density cyan, magenta and yellow.
Supplemental Cartridge	Cartridge other than the full density cyan, magenta, yellow and black cartridges
Individual Cartridge Yield	Value determined by counting the number of diagnostic pages (last page of the test page suite) printed between cartridge installation and end of life, and multiplying by five

**Photo Ink Methodology and Definitions –
In accordance with QualityLogic Color Photo Cartridge Yield Test Methodology**

Test Suite	QualityLogic Color Photo Suite
Driver Set-up*	The highest print quality mode readily available in the driver was used
Paper	The best photo paper recommended by each manufacturer. A4 or 8 ½" x 11" papers were used to print a borderless 4" x 6" (approximately 10 x 15 cm) photo. (See individual test reports)
Semi-Continuous Printing	Each copy of the test suite was printed as a separate 10-page print job allowing for some intra-job servicing and calibration to take place
Primary Cartridge	Cyan, Magenta, Yellow and Photo cartridges or any cartridges containing these colors were considered as primary cartridges. In addition, any other cartridge that exhausted nine or more cartridges during the execution of nine of the above cartridges was considered as primary.
Supplemental Cartridge	Any cartridge installed in the printer while printing photos that did not meet the definition of a primary cartridge was considered a supplemental cartridge
Individual Cartridge Yield	The number of test pages printed between cartridge installation and end of life

The following data was extracted from the Yield Reports for each product tested – complete reports are available upon request.

Printer Identifier	ESP-3 All-in-One Printer
Printer Manufacturer	Kodak
Cartridge Identifier	Black Ink Cartridge 10 & Color Ink Cartridge 10
Cartridge Type	Separate ink supply and print head
Date Tested	September 10, 2008 to September 22, 2008
EOL Criteria	This printer has Ink Out which stops printing. Whichever came first, either Ink Out or Fade, was used as the EOL criteria.
Print mode used	Continuous
Paper Size	Letter
Media used	Xerox Business 4200, 92 Brightness, 20lb. weight
Driver version	Driver Version=07/17/2008, 2.07.0151.0 Color Ink test: The driver's default settings were used. Mono Ink Test: Print color as = Changed to Black and White from Color

Declaration of Yield

<p>Inkjet Cartridge Yield when tested in Kodak ESP-3 All-in-One Printer::</p> <p>Using the test suite defined in ISO/IEC 24712 provides the following results: Average K (Black) Cartridge Yield – Up to 340 standard pages Average Color Cartridge Yield – Up to 379 standard pages</p> <p>Using the test page defined in ISO/IEC 19752 provides the following results: Average K (Black) Cartridge Yield – Up to 555 standard pages Estimated supplemental Color Cartridge Yield – Up to 4,313 standard pages</p> <p>Values obtained by continuous printing. Declared yield values in accordance with ISO/IEC 24711</p>
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ISO 24712

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
Black Ink Cartridge 10	K (Black)	345	340	9/12
Color Ink Cartridge 10	Color	386	379	9/9

ISO 19752

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
Black Ink Cartridge 10	K (Black)	557	555	24/24
Color Ink Cartridge 10*	Color	4,758	4,313	3/3

* Denotes supplemental cartridge

Resultados de teste e informações de custo fornecidos pela QualityLogic. Os testes foram realizados sob condições laboratoriais; os resultados dos usuários finais podem apresentar variações. Os resultados de teste, os preços dos cartuchos de tinta e o custo por página estão sujeitos a alteração pela QualityLogic sem prévia comunicação. Todos os resultados de testes e informações de custo são fornecidos "na presente forma" e "conforme a disponibilidade", ficando afastada toda e qualquer garantia expressa ou implícita. Os usuários das informações aqui contidas assumem a plena responsabilidade e o risco de perda resultante do uso das referidas informações.

Printer Identifier	ESP-3 All-in-One Printer
Printer Manufacturer	Kodak
Cartridge Identifier	Black Ink Cartridge 10 & Color Ink Cartridge 10
Cartridge Type	Separate ink supply and print head
Date Tested	September 10, 2008 to September 22, 2008
EOL Criteria	This printer has Ink Out which stops printing. Whichever came first, either Ink Out or Fade, was used as the EOL criteria.
Print mode used	Continuous
Paper Size	4" x 6" borderless photo on 8 ½" x 11" photo paper
Media used	KODAK Ultra Premium Photo Paper High Gloss
Driver version	Driver Version=07/17/2008, 2.07.0151.0 The driver's default settings were used.

Declaration of Yield

Inkjet Cartridge Yield when tested in Kodak ESP-3 All-in-One Printer::

Using the QualityLogic Color Photo test suite provides the following results:

Average Color Cartridge Yield – Up to 173 standard pages

Estimated supplemental K (Black) Cartridge Yield – Up to 1,509 standard pages

Values obtained by continuous printing. Declared yield values in accordance with QualityLogic Color Photo Yield Test Methodology

QualityLogic Color Photo Suite

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
Color Ink Cartridge 10	Color	173	173	9/9
Black Ink Cartridge 10*	K (Black)	1,719	1,509	3/3

* Denotes supplemental cartridge

Printer Identifier	ESP-5 All-in-One Printer
Printer Manufacturer	Kodak
Cartridge Identifier	Black Ink Cartridge 10 & Color Ink Cartridge 10
Cartridge Type	Separate ink supply and print head
Date Tested	August 25, 2008 to September 4, 2008
EOL Criteria	This printer has Ink Out which stops printing. Whichever came first, either Ink Out or Fade, was used as the EOL criteria.
Print mode used	Continuous
Paper Size	Letter
Media used	Xerox Business 4200, 92 Brightness, 20lb. weight
Driver version	Driver Version=07/17/2008, 2.07.0151.0 Color Ink test: The driver's default settings were used. Mono Ink Test: Print color as = Changed to Black and White from Color

Declaration of Yield

Inkjet Cartridge Yield when tested in Kodak ESP-5 All-in-One Printer::

Using the test suite defined in ISO/IEC 24712 provides the following results:

Average K (Black) Cartridge Yield – Up to 342 standard pages

Average Color Cartridge Yield – Up to 379 standard pages

Using the test page defined in ISO/IEC 19752 provides the following results:

Average K (Black) Cartridge Yield – Up to 551 standard pages

Estimated supplemental Color Cartridge Yield – Up to 4,395 standard pages

Values obtained by continuous printing. Declared yield values in accordance with ISO/IEC 24711

ISO 24712

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
Black Ink Cartridge 10	K (Black)	347	342	9/12
Color Ink Cartridge 10	Color	387	379	9/9

ISO 19752

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
Black Ink Cartridge 10	K (Black)	552	551	24/24
Color Ink Cartridge 10*	Color	4,415	4,395	3/3

* Denotes supplemental cartridge

Printer Identifier	ESP-5 All-in-One Printer
Printer Manufacturer	Kodak
Cartridge Identifier	Black Ink Cartridge 10 & Color Ink Cartridge 10
Cartridge Type	Separate ink supply and print head
Date Tested	September 4, 2008 to September 8, 2008
EOL Criteria	This printer has Ink Out which stops printing. Whichever came first, either Ink Out or Fade, was used as the EOL criteria.
Print mode used	Continuous
Paper Size	4" x 6" borderless photo on 8 ½" x 11" photo paper
Media used	KODAK Ultra Premium Photo Paper High Gloss
Driver version	Driver Version=07/17/2008, 2.07.0151.0 The driver's default settings were used.

Declaration of Yield

Inkjet Cartridge Yield when tested in Kodak ESP-5 All-in-One Printer:

Using the QualityLogic Color Photo test suite provides the following results:

Average Color Cartridge Yield – Up to 172 standard pages

Estimated supplemental K (Black) Cartridge Yield – Up to 1,371 standard pages

Values obtained by continuous printing. Declared yield values in accordance with QualityLogic Color Photo Yield Test Methodology

QualityLogic Color Photo Suite

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
Color Ink Cartridge 10	Color	173	172	9/9
Black Ink Cartridge 10*	K (Black)	1,677	1,371	3/3

* Denotes supplemental cartridge

Printer Identifier	Canon PIXMA MP160
Printer Manufacturer	Canon
Cartridge Identifier	PG-40, CL-41
Cartridge Type	Integral ink supply and print head
Date Tested	January 30, 2007 to February 5, 2007
EOL Criteria	Fade
Print mode used	Continuous
Paper Size	Letter
Media used	Xerox Business 4200, 92 Brightness, 20lb. weight
Driver version	Driver Version = 05/11/2006 The following default driver settings were used: Paper = Plain Quality = Standard

Declaration of Yield

Inkjet Cartridge Yield when tested in Canon PIXMA MP160:

Using the test suite defined in ISO/IEC 24712 provides the following results:

Average K (Black) Cartridge Yield: Up to 332 standard pages

Average Tri-color Cartridge Yield: Up to 324 standard pages

Using the test page defined in ISO/IEC 19752 provides the following results:

Average K (Black) Cartridge Yield: Up to 360 standard pages

Estimated supplemental Tri-color Cartridge Yield: Up to 2,411 standard pages

Values obtained by continuous printing. Declared yield value in accordance with ISO/IEC 24711.

ISO 24712

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
PG-40	K (Black)	349	332	9/12
CL-41	Tri-color	333	324	9/15

ISO 19752

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
PG-40	K (Black)	370	360	9/9
CL-41*	Tri-color	2,548	2,411	3/3

* Denotes supplemental cartridge

Printer Identifier	Canon PIXMA MP160
Printer Manufacturer	Canon
Cartridge Identifier	PG-40, CL-41
Cartridge Type	Integral ink supply and print head
Date Tested	February 6, 2007 to February 7, 2007
EOL Criteria	Fade
Print mode used	Continuous
Paper Size	4" x 6" borderless photo on 8 ½" x 11" photo paper
Media used	PP-101, Photo Paper Plus Glossy
Driver version	Driver Version = 05/11/2006 The following driver settings were used: Print Quality = High Paper Type = Photo Paper Plus Glossy

Declaration of Yield

Inkjet Cartridge Yield when tested in Canon PIXMA MP160:

Using the QualityLogic Color Photo Suite:

Average Tri-color Cartridge Yield: Up to 110 standard pages

Estimated supplemental K (Black) Cartridge Yield: Up to 1,786 standard pages

Values obtained by continuous printing. Declared yield value in accordance with QualityLogic Color Photo Cartridge Yield Test Methodology.

QualityLogic Color Photo Suite

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
CL-41	Tri-color	113	110	9/9
PG-40*	K (Black)	1,808	1,786	3/3

* Denotes supplemental cartridge

Printer Identifier	Epson Stylus CX8300
Printer Manufacturer	Epson
Cartridge Identifier	T0731, T0732, T0733, T0734
Cartridge Type	Separate ink supply and print head
Date Tested	April 3, 2008 to April 7, 2008
EOL Criteria	This printer has Ink Out which stops printing. Whichever came first, either Ink Out or Fade, was used as the EOL criteria.
Print mode used	Continuous
Paper Size	Letter
Media used	Xerox Business 4200, 92 Brightness, 20lb. weight
Driver version	DriverVer=5/11/2007, 6.50.00.00 The following driver settings were changed from default: Color Ink Test: The drivers default settings were used for testing. Mono Ink Test: Calidad de impresion = Changed to Texto from Texto e imagenes. The "Solo tinta negra" option was enabled in the Avanzado tab.

Declaration of Yield

Inkjet Cartridge Yield when tested in Epson Stylus CX8300:

Using the test suite defined in ISO/IEC 24712 provides the following results:

- Average K (Black) Cartridge Yield: Up to 245 standard pages
- Average Cyan Cartridge Yield: Up to 390 standard pages
- Average Yellow Cartridge Yield: Up to 411 standard pages
- Average Magenta Cartridge Yield: Up to 289 standard pages

Using the test page defined in ISO/IEC 19752 provides the following results:

- Average K (Black) Cartridge Yield: Up to 247 standard pages
- Estimated Supplemental Cyan Cartridge Yield: Up to 1,465 standard pages
- Estimated Supplemental Yellow Cartridge Yield: Up to 2,312 standard pages
- Estimated Supplemental Magenta Cartridge Yield: Up to 2,114 standard pages

Values obtained by continuous printing. Declared yield value in accordance with ISO/IEC 24711.

ISO 24712

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
T0731	K (Black)	249	245	15/20
T0732	Cyan	399	390	9/15
T0734	Yellow	422	411	9/12
T0733	Magenta	297	289	12/18

ISO 19752

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
T0731	K (Black)	254	247	9/9
T0732*	Cyan	1,713	1,465	3/3
T0734*	Yellow	2,536	2,312	3/3
T0733*	Magenta	2,526	2,114	3/3

* Denotes supplemental cartridge

Printer Identifier	Epson Stylus CX8300
Printer Manufacturer	Epson
Cartridge Identifier	T0731, T0732, T0733, T0734
Cartridge Type	Separate ink supply and print head
Date Tested	April 8, 2008 to April 11, 2008
EOL Criteria	This printer has Ink Out which stops printing. Whichever came first, either Ink Out or Fade, was used as the EOL criteria.
Print mode used	Continuous
Paper Size	4" x 6" borderless photo on 8 ½" x 11" photo paper
Media used	Epson Premium Photo Paper Glossy (S041286)
Driver version	DriverVer=5/11/2007, 6.50.00.00 The following driver settings were changed from default: Calidad de impresion = Changed to Foto superior from Texto e imagenes. Papel = Changed to Premium Photo Paper Glossy from Papel normal / Bright White paper. Opciones de papel y calidad de impresion = Changed to Photo RPM from Normal.

Declaration of Yield

Inkjet Cartridge Yield when tested in Epson Stylus CX8300:

Using the QualityLogic Color Photo Suite:

Average Cyan Cartridge Yield: Up to 85 standard pages

Average Yellow Cartridge Yield: Up to 114 standard pages

Average Magenta Cartridge Yield: Up to 86 standard pages

Estimated supplemental K (Black) Cartridge Yield: Up to 468 standard pages

Values obtained by continuous printing. Declared yield value in accordance with QualityLogic Color Photo Cartridge Yield Test Methodology.

QualityLogic Color Photo Suite

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
T0732	Cyan	88	85	11/13
T0734	Yellow	118	114	9/9
T0733	Magenta	88	86	10/12
T0731*	K (Black)	535	468	3/3

* Denotes supplemental cartridge

Printer Identifier	HP Photosmart C4180
Printer Manufacturer	Hewlett-Packard
Cartridge Identifier	HP98, HP93
Cartridge Type	Integral ink supply and print head
Date Tested	January 22, 2007 to January 30, 2007
EOL Criteria	Fade
Print mode used	Continuous
Paper Size	Letter
Media used	Xerox Business 4200, 92 Brightness 20lb. weight
Driver version	Driver Version = 60.54.44.0 The driver's default setting was used: Quality = Normal Paper = Plain

Declaration of Yield

Inkjet Cartridge Yield when tested in HP Photosmart C4180:

Using the test suite defined in ISO/IEC 24712 provides the following results:

Average K (Black) Cartridge Yield: Up to 399 standard pages

Average Tri-color Cartridge Yield: Up to 206 standard pages

Using the test page defined in ISO/IEC 19752 provides the following results:

Average K (Black) Cartridge Yield: Up to 428 standard pages

Estimated supplemental Tri-color Cartridge Yield: Up to 3,908 standard pages

Values obtained by continuous printing. Declared yield value in accordance with ISO/IEC 24711.

ISO 24712

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
HP98	K (Black)	411	399	9/12
HP93	Tri-color	213	206	15/21

ISO 19752

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
HP98	K (Black)	438	428	9/9
HP93*	Tri-color	4,102	3,908	3/3

* Denotes supplemental cartridge

Printer Identifier	HP Photosmart C4180
Printer Manufacturer	Hewlett-Packard
Cartridge Identifier	HP98, HP93
Cartridge Type	Integral ink supply and print head
Date Tested	January 25, 2007 to January 26, 2007
EOL Criteria	Fade
Print mode used	Continuous
Paper Size	4" x 6" borderless photo on 8 ½" x 11" photo paper
Media used	HP Premium Plus High-gloss Photo Paper (Q1785A)
Driver version	Driver Version = 60.54.44.0 The following driver settings were used: Photo printing-with white borders Print Quality = Best Paper Type = HP Premium Plus Photo Papers

Declaration of Yield

Inkjet Cartridge Yield when tested in HP Photosmart C4180:

Using the QualityLogic Color Photo Suite:

Average Tri-color Cartridge Yield: Up to 60 standard pages

Estimated supplemental K (Black) Cartridge Yield: Up to 2,675 standard pages

Values obtained by continuous printing. Declared yield value in accordance with QualityLogic Color Photo Cartridge Yield Test Methodology.

QualityLogic Color Photo Suite

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
HP93	Tri-color	62	60	9/10
HP98*	K (Black)	2,869	2,675	3/3

* Denotes supplemental cartridge

Printer Identifier	HP Photosmart C4280
Printer Manufacturer	Hewlett-Packard
Cartridge Identifier	HP74, HP75
Cartridge Type	Integral ink supply and print head
Date Tested	June 14, 2007 to June 18, 2007
EOL Criteria	Fade
Print mode used	Continuous
Paper Size	Letter
Media used	Xerox Business 4200, 92 Brightness 20lb. weight
Driver version	Driver Version = 12/26/2006,61.063.247.00 The driver's default setting was used: Quality = Normal Paper = Plain

Declaration of Yield

Inkjet Cartridge Yield when tested in Hewlett-Packard Photosmart C4280:

Using the test suite defined in ISO/IEC 24712 provides the following results:
Average K (Black) Cartridge Yield – Up to 186 standard pages
Average Tri-color Cartridge Yield – Up to 166 standard pages

Using the test page defined in ISO/IEC 19752 provides the following results:
Average K (Black) Cartridge Yield – Up to 201 standard pages
Estimated supplemental Tri-color Cartridge Yield Up to 979 standard pages

Values obtained by continuous printing. Declared yield values in accordance with ISO/IEC 24711

ISO 24712

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
HP74	K (Black)	197	186	9/9
HP75	Tri-color	171	166	9/12

ISO 19752

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
HP74	K (Black)	204	201	9/9
HP75*	Tri-color	1,109	979	3/3

* Denotes supplemental cartridge

Printer Identifier	HP Photosmart C4280
Printer Manufacturer	Hewlett-Packard
Cartridge Identifier	HP74, HP75
Cartridge Type	Integral ink supply and print head
Date Tested	June 19, 2007
EOL Criteria	Fade
Print mode used	Continuous
Paper Size	4" x 6" borderless photo on 8 ½" x 11" photo paper
Media used	HP Premium Plus High-gloss Photo Paper (Q1785A)
Driver version	Driver Version = 12/26/2006,61.063.247.00 The following settings were used: Photo printing-with white borders Print Quality = Best Paper Type = HP Premium Plus Photo Paper

Declaration of Yield

Inkjet Cartridge Yield when tested in Hewlett-Packard Photosmart C4280:

Using the QualityLogic Color Photo test suite provides the following results:

Average Tri-color Cartridge Yield – Up to 47 standard pages

Estimated supplemental K (Black) Cartridge Yield – Up to 1,002 standard pages

Values obtained by continuous printing. Declared yield values in accordance with QualityLogic Color Photo Yield Test Methodology

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
HP74	Tri-color	48	47	9/9
HP75	K (Black)	1,104	1,002	3/3

Printer Identifier	HP Photosmart C5280
Printer Manufacturer	Hewlett-Packard
Cartridge Identifier	HP74, HP75
Cartridge Type	Integral ink supply and print head
Date Tested	June 28, 2007 to July 5, 2007
EOL Criteria	Fade
Print mode used	Continuous
Paper Size	Letter
Media used	Xerox Business 4200, 92 Brightness 20lb. weight
Driver version	Driver Version = 3/15/2007,61.071.244.00 The driver's default setting was used: Quality = Normal Paper = Plain

Declaration of Yield

Inkjet Cartridge Yield when tested in Hewlett-Packard Photosmart C5280:

Using the test suite defined in ISO/IEC 24712 provides the following results:

Average K (Black) Cartridge Yield – Up to 203 standard pages

Average Tri-color Cartridge Yield – Up to 169 standard pages

Using the test page defined in ISO/IEC 19752 provides the following results:

Average K (Black) Cartridge Yield – Up to 224 standard pages

Estimated supplemental Tri-color Cartridge Yield Up to 1,016 standard pages

Values obtained by continuous printing. Declared yield values in accordance with ISO/IEC 24711

ISO 24712

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
HP74	K (Black)	209	203	9/12
HP75	Tri-color	174	169	9/15

ISO 19752

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
HP74	K (Black)	228	224	9/9
HP75*	Tri-color	1,020	1,016	3/3

* Denotes supplemental cartridge

Printer Identifier	HP Photosmart C5280
Printer Manufacturer	Hewlett-Packard
Cartridge Identifier	HP74, HP75
Cartridge Type	Integral ink supply and print head
Date Tested	July 6, 2007
EOL Criteria	Fade
Print mode used	Continuous
Paper Size	4" x 6" borderless photo on 8 ½" x 11" photo paper
Media used	HP Premium Plus High-gloss Photo Paper (Q1785A)
Driver version	Driver Version = 03/15/2007,61.071.244.00 The following settings were used: Photo printing-with white borders Print Quality = Best Paper Type = HP Premium Plus Photo Paper

Declaration of Yield

Inkjet Cartridge Yield when tested in Hewlett-Packard Photosmart C5280:

Using the QualityLogic Color Photo test suite provides the following results:

Average Tri-color Cartridge Yield – Up to 48 standard pages

Estimated supplemental K (Black) Cartridge Yield – Up to 1,154 standard pages

Values obtained by continuous printing. Declared yield values in accordance with QualityLogic Color Photo Yield Test Methodology

QualityLogic Color Photo Suite

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
HP75	Tri-color	48	48	9/9
HP74*	K (Black)	1,197	1,154	3/3

* Denotes supplemental cartridge

Printer Identifier	Lexmark X5470
Printer Manufacturer	Lexmark
Cartridge Identifier	32 (18C0032) & 33 (18C0033)
Cartridge Type	Integral ink supply and print head
Date Tested	October 22, 2007 to October 29, 2007
EOL Criteria	Fade was used as the EOL criteria.
Print mode used	Continuous
Paper Size	Letter
Media used	Xerox Business 4200, 92 Brightness 20lb. weight
Driver version	Printer Driver = 3.117.0.0 The following driver settings were changed from default: Paper Type = Changed to Plain from Sensed

Declaration of Yield

Inkjet Cartridge Yield when tested in Lexmark X5470:

Using the test suite defined in ISO/IEC 24712 provides the following results:

Average K (Black) Cartridge Yield – Up to 274 standard pages

Average Tri-Color Cartridge Yield – Up to 272 standard pages

Using the test page defined in ISO/IEC 19752 provides the following results:

Average K (Black) Cartridge Yield – Up to 287 standard pages

Estimated supplemental Tri-Color Cartridge Yield – Up to 2,504 standard pages

Values obtained by continuous printing. Declared yield value in accordance with ISO/IEC 24711.

ISO 24712

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
32 (18C0032)	K (Black)	287	274	9/15
33 (18C0033)	Tri-color	287	272	9/14

ISO 19752

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
32 (18C0032)	K (Black)	300	287	9/10
33 (18C0033)*	Tri-color	2,684	2,504	3/3

* Denotes supplemental cartridge

Printer Identifier	Lexmark X5470
Printer Manufacturer	Lexmark
Cartridge Identifier	32 (18C0032) & 33 (18C0033)
Cartridge Type	Integral ink supply and print head
Date Tested	October 30, 2007 to November 5, 2007
EOL Criteria	Fade was used as the EOL criteria.
Print mode used	Continuous
Paper Size	4" x 6" borderless photo on 8 ½" x 11" photo
Media used	Lexmark Premium Photo Paper (21G1740)
Driver version	Printer Driver = 3.117.0.0 The following driver settings were changed from default: Quality = Changed to Photo from Automatic Type = Changed to Lexmark Premium Photo Paper from Sensed

Declaration of Yield

Inkjet Cartridge Yield when tested in Lexmark X5470:

Using the QualityLogic Color Photo Suite:

Average Tri-color Cartridge Yield – Up to 71 standard pages

Estimated supplemental K (Black) Cartridge Yield – Up to 4,378 standard pages

Values obtained by continuous printing. Declared yield value in accordance with QualityLogic Color Photo Cartridge Yield Test Methodology.

QualityLogic Color Photo Suite

Cartridge Identifier	Color	Average (pages)	90% Lower Confidence (pages)	Number used in calculations/test
33 (18C0033)	Tri-color	73	71	26/28
32 (18C0032)*	K (Black)	5,420	4,378	3/3

* Denotes supplemental cartridge

Sub-Appendix A1 – Test Pages

ISO/ ISO/IEC 24712 Test Suite



ISO/IEC 19752 Test Page



QualityLogic Photo Test Suite

