

Inkjet and Laser Toner Cartridges Page Yield

Page yield describes the estimated number of pages that can be printed with a particular printing (inkjet or toner) cartridge. The standards were defined by [International Organization for Standardization \(ISO\)](#), in conjunction with the International [Electrotechnical Commission \(IEC\)](#) in June 2004 for monochrome laser toner cartridges (ISO/IEC 19752) and in December 2006 for color inkjet cartridges (ISO/IEC 24711) as well as for color laser toner cartridges (ISO/IEC 19798).

The ISO/IEC standards for printing cartridges clearly define the methods for testing and calculating average page yield measurements under a defined set of parameters and conditions. The ISO/IEC specifications also stipulate the use of standardized test pages printed in a controlled environment with printer default settings.

The actual page yield received by the users may vary from the ISO/IEC standards because the printer usage conditions in the users' workplaces vary from the ISO/IEC yield testing conditions. The ISO/IEC 19798 states: "... It is realized that customers do not normally print in a continuous fashion, but these changes are made to decrease testing time and increase the repeatability of the testing process. Depending on use conditions, the yield experienced by a given customer may vary significantly from the yield measured by this test method."

Monochrome laser toner cartridge yield

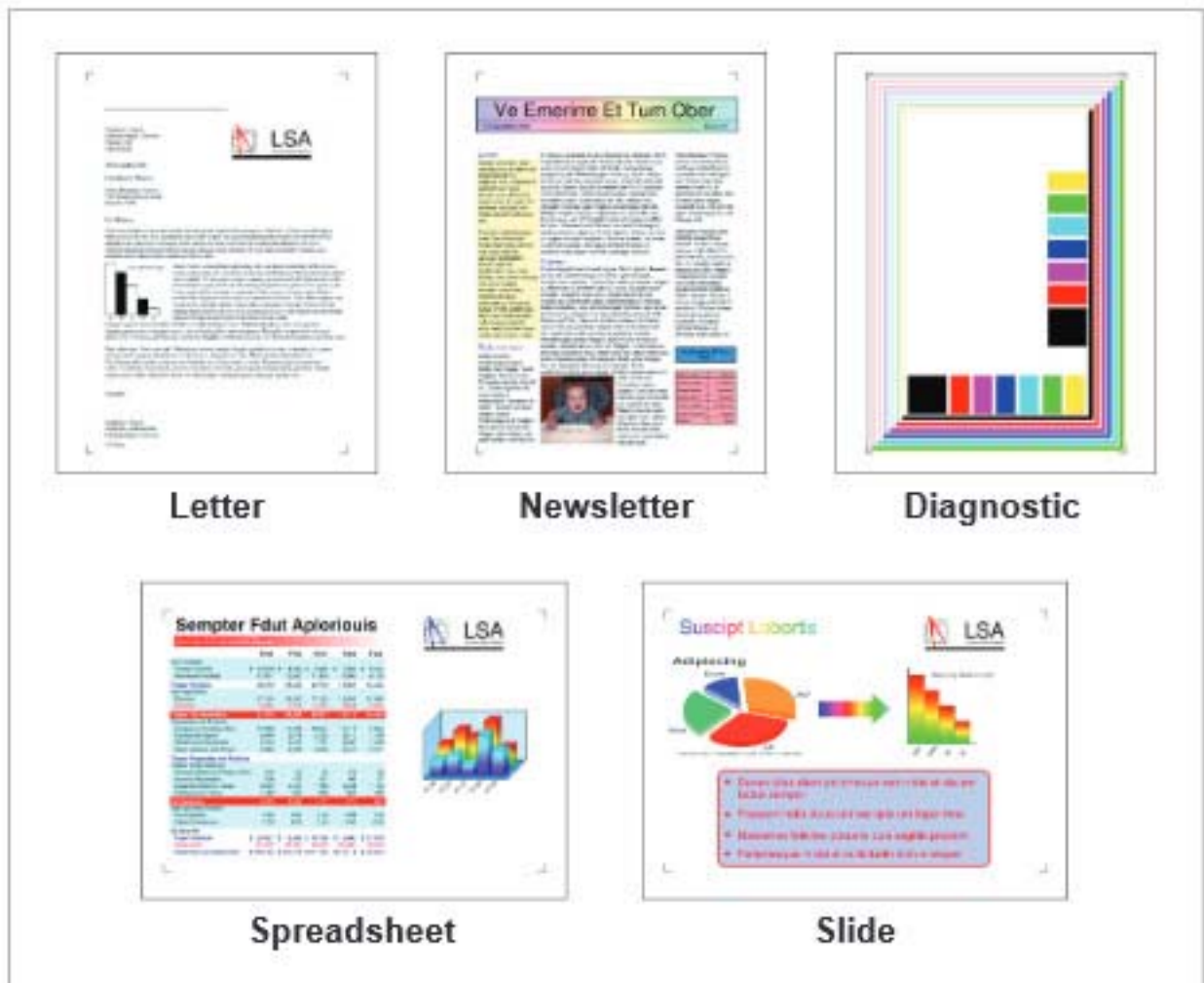
The ISO/IEC 19752 test procedure requires a standard test page with approximately 5% coverage to be printed continuously until the cartridge reaches end of life.



5 percent monochrome toner page coverage (ISO/IEC-19752)

Color laser toner cartridge and color inkjet cartridges yield

The ISO/IEC 19798 (color laser toner cartridges) and ISO/IEC 24711 (color inkjet cartridges) test procedure requires a standard set of five test pages to be printed continuously until the cartridge reaches end of life. Color printing involves cyan, magenta, yellow and black ink or toner. The five standard pages contain a mix of text and graphics and different amounts of coverage to achieve an average of approximately 5% coverage per color per page.



5 percent per color page coverage (ISO/IEC-19798 and ISO/IEC-24711)

Differences between consumer printing and ISO/IEC standards

In actual use, consumers are most likely not to replicate the exact page layout, content and test parameters and conditions required in the ISO/IEC tests. Their printers may not always use the same drivers and settings used by the ISO/IEC test standards.

As a result, the actual page yields that consumers will experience can vary considerably higher or lower. The main factors that can impact affect actual page yield of the printing cartridges are listed below:

- Page coverage and color usage – page coverage, represented as the percentage of the page containing ink or toner. The average page coverage for a black and white page is between 4% and 5%. Color printing typically involves higher average page coverage than black and white printing. Here are some examples:



10% -- 15% total page coverage, 40% -- 65% total page coverage, 80% -- 100% total page coverage

- Printing job size -- The number of pages printed at a time is another factor on print cartridge yields. Typically, print cartridge yields improve with a higher average job size.
- Images -- The thickness of the printed layer on the paper is often different on edges than in the middle of printed areas. So for images composed of lots of edges, a different amount of ink or toner may be used to create a given coverage than is used for the same coverage in solid areas or even in text. This results in a different yield than expected based on page coverage alone.
- Environmental conditions -- Temperature and humidity outside of standard office parameters can affect print cartridge yields.
- Calibration and job frequency-- Many printers use a calibration procedure to improve print quality and maintain print consistency throughout the life of the device. Calibration cycles use a small amount of ink or toner each time they occur. Factors such as a large number of power-on and power-off cycles, cartridge movement from device to device, and abrupt or frequent changes in office temperature can increase calibration frequency.
- Power-on time without printing
- Copy or fax mode for multi-functional printers (MFPs) – The toner usage in copy or fax mode for many laser toner MFPs is different than in direct printer mode. The scanning process of a document and the application of a number of image adjustment features can result in output that has more or less actual coverage than the original being scanned.
- Paper type -- Various kinds of paper require different amounts of ink or toner to achieve desirable print quality.

- Some laser toner cartridges require a shake when “toner low” is reported or when print begins to fade to redistribute the toner within the cartridge and ensure maximum cartridge life is achieved. Customers who don’t perform this recommended step and instead replace the cartridge at the initial toner low signal, may discard a significant amount of usable toner that remains in the cartridge.

Source: [Inkjet and Laser Toner Cartridges Page Yield - Priceless Ink & Toner](#)