

**CANON LASER PRINTER
TONER CARTRIDGES FOR RUSSIA
(CRG-719)
PRINTS COMPARISON TEST
SUMMARY REPORT**



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Canon Laser Printer, Toner Cartridges for Russia (CRG-719) Prints Comparison Test Summary Report

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1 Forward

Allion Japan Inc. (hereafter “Allion” for short) conducted its first gas resistance comparison test in June 2007, in which genuine ink and third party refill ink for inkjet printers were compared in a triple mixed gas fastness test. Then, ink cartridges sold in Japan and in overseas markets were compared over the years from 2007 through 2014 in a series of various tests, including toner cartridge yield tests, actual environment exposure tests, and usability tests, all conducted from the viewpoint of users and in user conditions.

This time, focusing again on the monochromatic laser printer toner cartridges, which were tested in 2014, Allion used genuine and non-genuine toner cartridges different from those used in 2014 to verify, from various angles, what kinds of effect those toner cartridges give on the printer main body or printed matter over the period from unpacking and installation until two toner cartridges run out of toner. The objective of this test, which was a test conducted in a fair manner by a third party verification organization, is to confirm to what extent the reliability of the genuine and non-genuine toner cartridges is assured.

In the following text, genuine toner cartridges are designated as Canon toner cartridges or abbreviated to Canon genuine, and non-genuine toner cartridges are designated as non-genuine toner cartridges or abbreviated to non-genuine. For explicitly describing differences in brand, Cactus brand toner cartridges are designated as “Cactus,” and NV Print brand toner cartridges are designated as “NV Print.”

2 Findings

The results of this prints comparison tests are as given in the table below:

Assessment Item	Canon Genuine	Cactus	NV Print
Packing/Unpacking condition assessment	No problem	No problem	No problem
Initial assessment	No problem	No problem	No problem
Toner cartridge yield assessment	Refer to the ratio of numbers of printed sheets on page 4.		
Printed image quality assessment	No problem	Density is dense overall; print density irregularities are recognized	Density is dense overall; print density irregularities are recognized
End of life indication	Indicated	No indication	No indication

In the case of the Canon genuine, no defects were detected in any item. In the case of the Cactus and the NV Print, some defects were found in some items. A summary of the detected defects is given below:

- (1) Print density reproducibility and stability are poor (Cactus and NV Print).
- (2) Because of no indication of out-of-toner messages, fade of printing may be unnoticed, causing loss of printing (Cactus and NV Print).

These defects are detailed in the test results that are given below.

3 Test Results

3.1 Packing/Unpacking Condition Assessment

The toner cartridges of Canon genuine, Cactus, and NV Print were checked for the packing condition and the condition on unpacking. No defective conditions of packing, including the outer box, were found for any of the toner cartridges. When the toner cartridges were unpacked, no defective conditions were found for any of the toner cartridges.

3.2 Initial Assessment (Assessment upon Installation)

When toner cartridges of each brand were used for printing with a Canon Monochromatic Laser Pinter LBP6330, no defects were found. In addition, when installing the toner cartridge in the printer, no defects (unable to install, unusual sound, etc.) were found in any of the toner cartridges.

3.3 Toner Cartridge Yield Assessment

The toner cartridge yield until two toner cartridges run out of toner was compared between Canon genuine and non-genuine toner cartridges under the following printing conditions. In this test, two printers were used for each brand of toner cartridges by taking into account dispersion in test results due to individual differences of printers. The table given below shows the average ratio of non-genuine toner cartridge yield with respect to Canon genuine toner cartridge yield, between two printers until two toner cartridges run out of toner.

In addition, when the printer indicates an error message for toner replacement, the toner cartridge in question was taken out, shaken, fitted again, and checked for fade; if no fade or the like occurred, the subsequent printing was continued until the second message for toner replacement was indicated. At that time, once more the toner cartridge in question was taken out, shaken, and then fitted again; if fade or the like occurred in the subsequent printing, then the toner cartridge in question was judged out of toner, and replaced.

Ratio of non-genuine toner cartridge yield with respect to Canon genuine toner cartridge yield (100%) (units in %)

Canon	Cactus	NV Print
100%	81%	87%

Printing conditions:

- Printer: Model LBP 6330, Driver version: Ver. 1.20
- Paper: Snegurochka (laser printer paper of size A4)
- Test data: ISO/IEC 24711:2007 test page suite
- Print settings: Paper: plain paper, Print quality: normal, Color/density: normal, Page layout: one page per sheet (normal)

The comparison of toner cartridge yield is summarized as follows:










In the comparison between the Cactus and the Canon genuine, the toner cartridge yield of the Cactus was less than that of the Canon genuine by 19%.

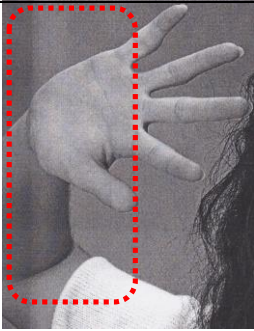
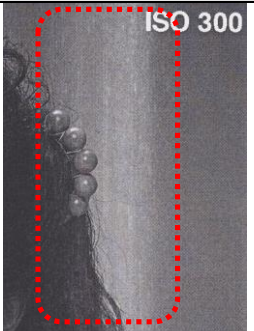
Similarly, in the comparison between the NV Print and the Canon genuine, the toner cartridge yield of the NV Print was less than that of the Canon genuine by 13%.


















In addition, in the case of Canon genuine toner cartridges, the “Replacement Needed Soon” message is indicated when the volume of toner decreases to a certain level, and the “Replace Cartridge” message is indicated when the end of life is reached during a toner cartridge yield test. In the case of non-genuine toner cartridges, however, the message for replacement is not indicated even if the volume of toner decreases, and there were occasions in which fade suddenly appeared on the printed matter. If this defect occurs, out-of-toner messages are not indicated when toner cartridges have run out. For this reason, printing may be continued without noticing fade on the printed matter, causing loss of printing.










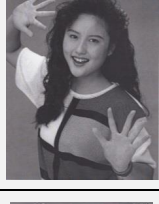


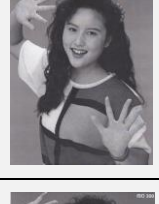





3.4 Printed Image Quality Assessment

The prescribed image (SCID image N1A) was printed when every 500 sheets were printed, and the print image quality was checked; this was repeated until two toner cartridges ran out of toner in the toner cartridge yield tests under the following printing conditions. When non-genuine toner cartridges were used, print density deviations accompanied by unstable density over the course of printing or density irregularities on the printed matter were recognized. The timing of print density deviations was mostly at the time of replacement of toner cartridge, suggesting that non-genuine toner cartridges may change in print density depending on individual toner cartridges. When Canon genuine toner cartridges were used, no defects were found.

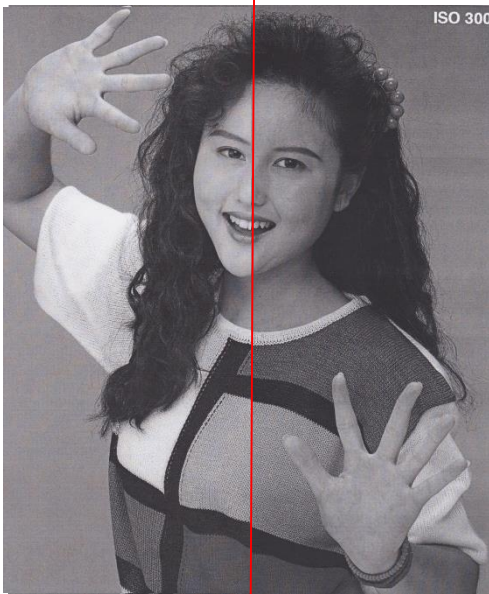
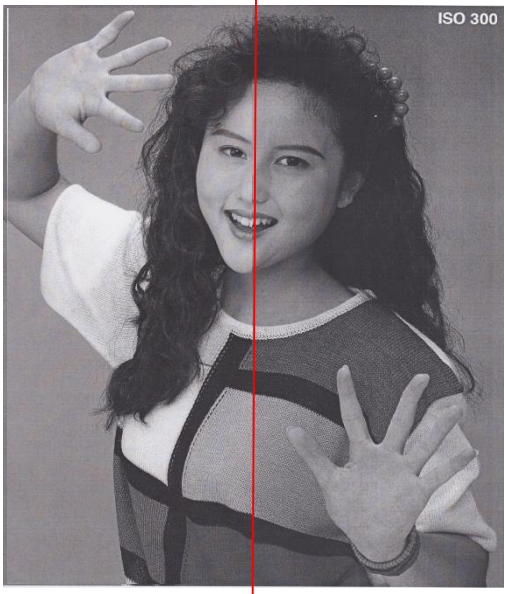
Printer	Number of sheets	Canon	Cactus	NV Print
LBP76330	After initial printing	 After 500 sheets were printed	 After 500 sheets were printed	 After 500 sheets were printed
	After intermediate printing	 After 6,000 sheets were printed	 After 4,500 sheets were printed	 After 5,000 sheets were printed
	After printing of sheets of toner cartridge yield	 After 12,000 sheets were printed	 After 9,500 sheets were printed	 After 10,000 sheets were printed
	Result	Density deviation is hardly visible	Density is unstable overall; density irregularities were continually recognized after 500 sheets were printed	Density is unstable overall; density irregularities were continually recognized after 5,000 sheets were printed

Enlarged view of portion surrounded by a red frame			
Cactus		NV Print	

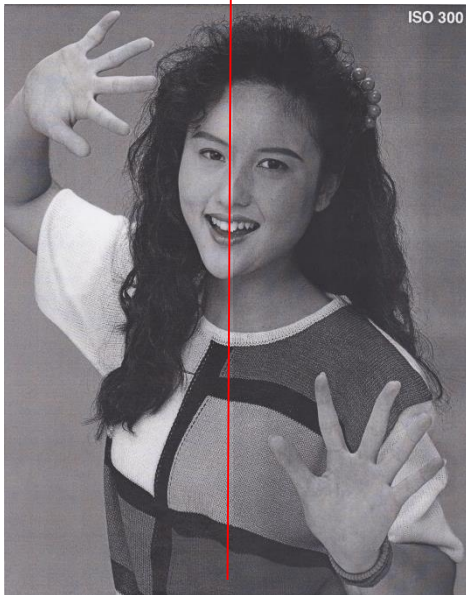

Printer	Cycle	Number of sheets	Canon	Cactus	NV Print
LBP6330	1	After 500 sheets were printed			
		After 2,500 sheets were printed			
		After 4,500 sheets were printed			
		After 6,500 sheets were printed			
		After 8,500 sheets were printed			
		After 10,500 sheets were printed			
		After 12,500 sheets were printed			
		Result	Density is stable	Density irregularities were continually recognized after 2,500 sheets were printed	Density irregularities were continually recognized after 500 sheets were printed

Printer	Cycle	Number of sheets	Canon	Cactus	NV Print
LBP6330	2	After 500 sheets were printed			
		After 2,000 sheets were printed			
		After 4,000 sheets were printed			
		After 6,000 sheets were printed			
		After 8,000 sheets were printed			
		After 10,000 sheets were printed			
		After 12,000 sheets were printed			
		Result	Density is stable	Density irregularities were continually recognized after 500 sheets were printed	Density irregularities were continually recognized after 6,000 sheets were printed

Print density comparison after 500 sheets were printed; the left half Canon genuine image is combined with the right half non-genuine image.

Printer	Canon vs Cactus	Canon vs NV Print
LBP6330	 <p>Density is dense compared with Canon genuine</p>	 <p>Density is dense compared with Canon genuine</p>








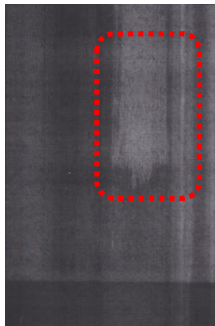
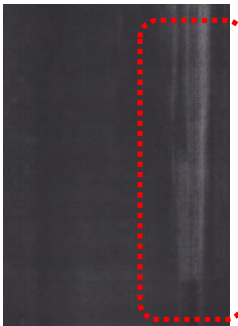
Print density comparison after 8,000 sheets were printed; the left half Canon genuine image is combined with the right half non-genuine image.

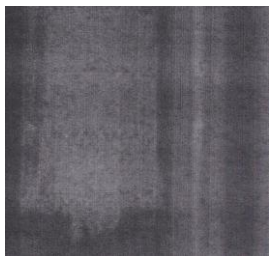

Printer	Canon vs Cactus	Canon vs NV Print
LBP6330	 <p>Density is dense compared with Canon genuine</p>	 <p>Density is dense compared with Canon genuine</p>

Printing conditions:

- Printer: Model LBP 6330, Driver version: Ver. 1.20
- Paper: Snegurochka (laser printer paper of size A4)
- Test data: SCID image N1A
- Print settings: Paper: plain paper, Print quality: normal, Color/density: normal, Page layout: one page per sheet (normal)

The prescribed image (SCID image N1A) was printed when every 500 sheets were printed, and then the prescribed image (solid image) was printed to check the density stability on the printed matter; this was repeated until two toner cartridges ran out of toner in the toner cartridge yield tests under the following printing conditions. When non-genuine toner cartridges were used, print density was not stable, with density irregularities being recognized. When Canon genuine toner cartridges were used, no such defects were found.

Printer	Number of sheets	Canon	Cactus	NV Print
LBP6330	After initial printing	 After 500 sheets were printed	 After 500 sheets were printed	 After 500 sheets were printed
	After intermediate printing	 After 6,000 sheets were printed	 After 4,500 sheets were printed	 After 5,000 sheets were printed
	After printing of sheets of toner cartridge yield	 After 12,000 sheets were printed	 After 9,500 sheets were printed	 After 10,000 sheets were printed
	Result	No deviation of density is visible	Density irregularities were recognized after 9,500 sheets were printed	Density irregularities were recognized after 10,000 sheets were printed

Enlarged view of portion surrounded by a red frame			
Cactus		NV Print	

Printing conditions:

- Printer: Model LBP 6330, Driver version: Ver. 1.20
- Paper: Snegurochka (laser printer paper of size A4)
- Test data: Solid image
- Print settings: Paper: plain paper, Print quality: normal, density: normal, Page layout: one page per sheet (normal)

4 Overview of the Test

4.1 Equipment Used

In this prints comparison test, each printer tested toner cartridges of the three brands until two black CRG cartridges ran out of toner for each brand. Two printers were used, and each printer tested non-genuine first.




- Printer: Canon Satera LBP6330 (Driver version: Ver. 1.20)

Manufacturer	Printer ID	Printer Serial Number
Canon genuine	Unit No. 1	NCKA022628
	Unit No. 2	NCKA022630

- Toner cartridges for Canon Satera LBP6330 (procured in Russian market)

Manufacturer	Model Number
Canon genuine	Cartridge719H
Cactus	CS-C719H
NV PRINT	Cartridge719H

- Photographs of sample toner box

Canon Genuine	Cactus	NV PRINT
		

➤ Test sequence

Printer ID	Test Sequence
Unit No. 1	Cactus ⇒ NV Print ⇒ Canon genuine
Unit No. 2	NV Print ⇒ Cactus ⇒ Canon genuine

➤ Numbers of Canon genuine toner cartridges used

Unit No. 1	Unit No. 2
2	2

➤ Numbers of Cactus toner cartridges used

Unit No. 1	Unit No. 2
2	2

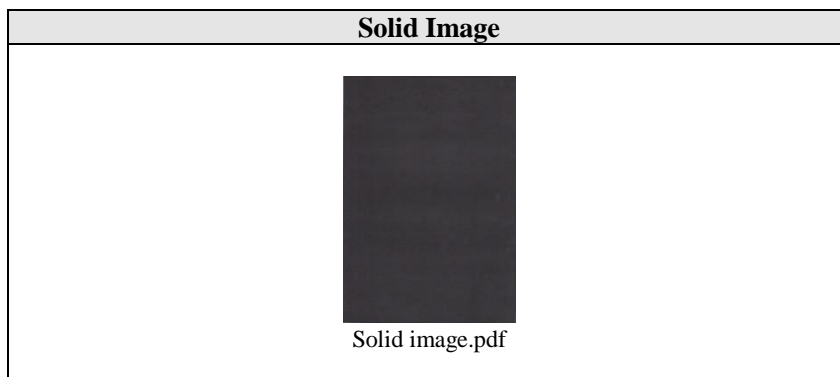
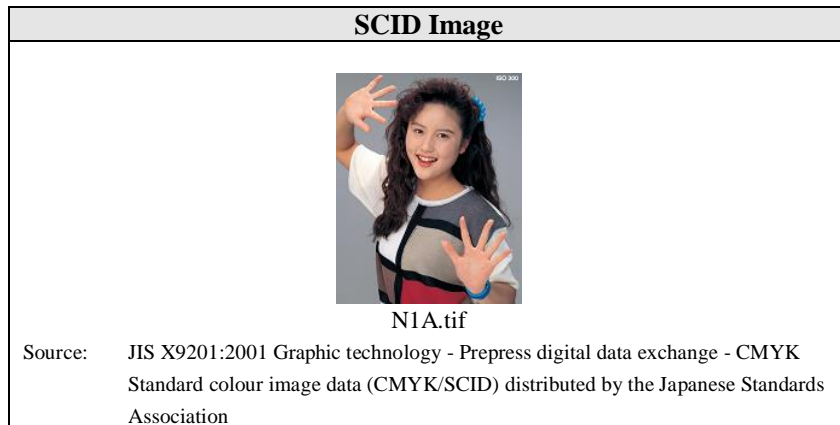
➤ Numbers of NV Print toner cartridges used

Unit No. 1	Unit No. 2
2	2

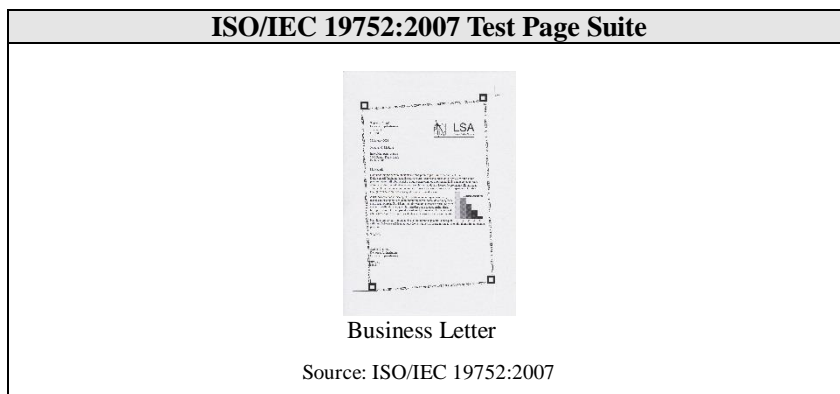
➤ Paper used for assessment (procured in Russian market)

Manufacturer	Paper Description
Snegurochka	Plain paper of size A4

- Print image data: SCID image N1A and solid image (for print assessment of print image quality)



- Print document data: ISO/IEC 19752 test page suite, Business Letter (for print assessment of toner cartridge yield)



4.2 Printing Conditions

- Printer: Canon Satera LBP6330
- Software and setting conditions

Item	Standard Values/ Details
Type and version of OS	Microsoft Windows 7 Home Premium (Japanese version)
Types and versions of application programs	Adobe Acrobat Reader 10 → Toner cartridge yield assessment Windows Photo Viewer (packaged with the Windows OS given above) → Image quality assessment
Printer driver version	Ver. 1.20
Setting conditions for the printer driver and application programs	<p><For toner cartridge yield assessment></p> <p>Paper: Plain paper Print quality: Normal Color/ density: Normal Paper size: A4 Page layout: One page per sheet (normal) Printing application: Adobe Acrobat Reader 10</p> <p><For image printing assessment></p> <p>Paper: Plain paper Print quality: Normal Color/ density: Normal Paper size: A4 Page layout: 20.3 × 25.4 Printing application: Windows Photo Viewer (packaged with the Windows OS given above)</p>

4.3 Test Procedures

4.3.1 Packing/Unpacking Condition Assessment

- (1) Check the condition of the wrapping of the toner box.
- (2) Take out the toner from the box, and take photographs of the front, rear, upper, lower, right, and left sides of the toner cartridge.
- (3) Check whether or not scattered toner is present at the time of unpacking.

4.3.2 Assessment during Installation of Toner Cartridge

- (1) Confirm that the insertion of toner cartridge is satisfactory.
- (2) Confirm the absence of unusual sound during printing.
- (3) Confirm the absence of scattered toner.
- (4) Confirm the fusion bonding of toner in the fuser.
- (5) Confirm the absence of any irregularities caused by the toner cartridge.
- (6) Confirm the absence of abnormal operation of the printer, such as error signals, during printing.

4.3.3 Toner Cartridge Yield Assessment

- (1) Install the toner cartridge in the printer.
- (2) Print the ISO/IEC 19752:2007 test page suite before the toner runs out of toner (*fade image).
- (3) When fade appears, stop the printing, and execute the recovery operation in accordance with the instruction manual provided with the printer.
- (4) If the recovery operation is unsuccessful, replace the toner cartridge with a new one.
- (5) Continue the above procedure until two toner cartridges run out (the aim of toner cartridge yield is 12,800 sheets).

Note: Fade image is judged on the basis of the “Example of fade (fade of 3 mm or more)” shown in ISO/IEC 19752:2004 "Information technology - Method for the determination of toner cartridge yield for monochromatic electrophotographic printers and multi-function devices that may contain printer components."

● Printed Image Quality Assessment

- (1) This assessment is conducted during the printing operation until two toner cartridges run out (the aim of toner cartridge yield is 12,800 sheets).
- (2) Print the prescribed images when every 500 sheets are printed.

5 Important: Notes on This Report

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