International Standard

ISO/IEC 19752

Information technology — Office equipment — Method for the determination of toner cartridge yield for monochromatic electrophotographic printers and multi-function devices that contain printer components

Technologies de l'information — Équipement de bureau — Méthode pour la détermination du rendement des cartouches de toner pour les imprimantes électrophotographiques monochromatiques et pour les dispositifs multifonctionnels qui contiennent des composants d'imprimantes

Third edition
2025-11

Reference number
ISO/IEC 19752:2025(en)

© ISO/IEC 2025



COPYRIGHT PROTECTED DOCUMENT

© ISO/IEC 2025

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **1**
4 Test parameters and conditions ... **2**
4.1 Set-up ... 2
4.2 Sample size ... 3
4.3 Print mode ... 3
4.4 Print environment ... 3
4.5 Paper ... 4
4.6 Maintenance ... 4
4.7 Test file ... 4
4.8 End of life ... 5
5 Test methodology ... **5**
5.1 Testing procedure ... 5
5.2 Procedure for handling a defective cartridge or printer ... 6
5.2.1 General ... 6
5.2.2 Defective cartridge ... 6
5.2.3 Defective printer ... 6
6 Determination of the yield value and declaration ... **6**
6.1 Determination of the declared cartridge yield value ... 6
6.2 Test data reporting ... 7
6.3 Declaration of the yield ... 7
Annex A (informative) **Examples of fade** ... **8**
Annex B (informative) **Process flowchart and examples** ... **9**
Annex C (normative) **Standard test page** ... **13**
Annex D (normative) **Sample reporting form** ... **19**
Annex E (informative) **Comparison of yield for two printing systems** ... **22**
Bibliography ... **24**

© ISO/IEC 2025 – All rights reserved

Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives or www.iec.ch/members_experts/refdocs).

ISO and IEC draw attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO and IEC take no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO and IEC had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents and https://patents.iec.ch. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html. In the IEC, see www.iec.ch/understanding-standards.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology,* Subcommittee SC 28, *Office equipment.*

This third edition cancels and replaces the second edition (ISO/IEC 19752:2017), which has been technically revised.

The main changes are as follows:

— the Scope was limited ” This document is not for use with printers whose minimum printable size is equal to or greater than A3 or for photo-only printers”;

— editorial changes;

— requirements were added in 4.4 regarding environmental conditions.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

© ISO/IEC 2025 – All rights reserved

Introduction

The purpose of this document is to provide a process for determining the page yield for toner cartridges for monochromatic print systems using a standard office consumer type test page. In the case where a cartridge can be used in multiple printer models, only one yield test is performed as long as the difference between printer models does not impact yield.

A cartridge supplier can choose to use more than one market identifier for a single physical cartridge. In this case, only one yield test is performed as long as there are no differences in the cartridges other than market identifiers.

This document prescribes the following:

— the test method that manufacturers, test laboratories, etc. used to determine cartridge yield;

— the method for determination of declared yield values from the test results;

— the appropriate method of describing the yield of cartridges in the documentation supplied to the consumer by the manufacturer.

The cartridge yield is determined by an end of life judgment, or signalled with either of two phenomena: fade caused by depletion of the useable toner in the cartridge or automatic printing stop caused by a toner out detection function.

NOTE A comparison of yield for two printing systems is shown in Annex E.

© ISO/IEC 2025 – All rights reserved

Information technology — Office equipment — Method for the determination of toner cartridge yield for monochromatic electrophotographic printers and multi-function devices that contain printer components

1 Scope

This document is limited to the evaluation of toner cartridge page yield for toner containing cartridges (i.e. all-in-one toner cartridges and toner cartridges without a photoconductor) for monochrome electrophotographic print systems. This document can also be applied to the printer component of any multifunctional device that has a digital input-printing path, including multi-function devices that contain printer components.

This document is only intended for the measurement of toner cartridge yield. No other claims may be made from this testing regarding quality, reliability, etc.

This document is not for use with printers whose minimum printable size is equal to or greater than A3 or for photo-only printers.

Application of this document for yield measurement of toner replenishment systems (i.e. toner cartridge- and bottle-type systems where the toner reservoir is internal to the printing system and not user-replaceable) implies some procedural modifications specifically noted herein. This document is intended for equipment used in the office space and does not apply to production volume or large format printing machines where the major cost of ownership is not caused by the consumable yield measured in this document.

NOTE 1 An all-in-one toner cartridge is a cartridge that includes at least a toner containment part, a photoreceptor part and a developer part (see ISO/IEC 29142-1).

NOTE 2 This document can be used for the measurement of one of the contributions to cost per page (CPP). This document does not directly measure CPP, only the yield of the toner cartridges. In most cases, these are not the only contributors to the CPP. It is beyond the scope of this document to provide a methodology for calculation of CPP.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
fade
phenomenon whereby a noticeable reduction in density uniformity across the page occurs

Note 1 to entry: In this test, fade is defined as a noticeably lighter, 3 mm or greater, gap located in the text or boxes around the periphery of the test page. The determination of the change in lightness is to be made referenced to the 100th page printed for each cartridge in testing. For examples of fade, see Annex A (Figure A.1).

© ISO/IEC 2025 – All rights reserved

3.2
shake procedure
specified method to carry out the shaking of a cartridge according to the user manual

3.3
toner low
signal generated by the printer when it has been detected that the amount of toner is such that a toner change will be required soon

Note 1 to entry: It does not indicate that the system is out of toner.

3.4
toner out
signal generated by the printer when the toner in the system is depleted and the printer is incapable of reliable printing without user intervention

Note 1 to entry: For the purpose of this test, the toner out signal will only be used if it causes the printer to stop printing and requires toner replacement to continue printing.

3.5
end of life
point when the printer declares *"toner out"* (3.4) or when *fade* (3.1) is observed

Note 1 to entry: For more information about the exact requirements for judging end of life, see 4.8.

3.6
individual cartridge yield
number of "standard page file" pages printed between cartridge installation and *end of life* (3.5)

Note 1 to entry: For replenishment systems, the individual cartridge yield is determined by counting the number of "standard page file" pages printed between prescribed quasi-end of life conditions, see 4.8.

3.7
declared cartridge yield
value at or below the lower 90 % confidence bound

Note 1 to entry: Detail of the value is described in 6.1.

4 Test parameters and conditions

4.1 Set-up

Place the printer on a horizontal surface and set-up the printer according to the installation guide provided in the printer user's manual. Use the most recent printer driver available from the manufacturer's website or the supplied driver with the printer. The driver version shall be specified on the test report. Cartridge installation shall be completed following the instructions in the cartridge installation guide. If there is a contradiction between the printer and cartridge manuals for the cartridge installation, the cartridge manual takes precedence except if changes are recommended for printer or driver settings.

If the cartridge used in testing is a toner replenishment or toner bottle type, then one complete toner cartridge shall be used in each printer before the start of the test. The pages printed to deplete this priming cartridge do not have to be recorded and printing may be conducted at any environment. This priming cartridge is used to bring the printing system to a set toner level condition.

All image and print quality modifiers shall be set to their factory pre-set configuration for the printer and the default installed condition for the driver. If there are discrepancies between the printer and driver settings, the driver defaults shall be used. Any user selectable toner conservation modes shall be disabled during testing.

For printers that default to duplex printing, the default shall be overridden and the printer shall be set to simplex for yield testing.

© ISO/IEC 2025 – All rights reserved