

---

---

## Method for the determination of ink cartridge yield for colour inkjet printers and multi-function devices that contain printer components

*Méthode pour la détermination du rendement de cartouche d'encre  
pour les imprimantes couleur à jet d'encre et pour les dispositifs  
multifonctionnels qui peuvent contenir des composants d'imprimantes*



## **COPYRIGHT PROTECTED DOCUMENT**

© ISO/IEC 2015, Published in Switzerland

All rights reserved. Unless otherwise specified, 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  
Ch. de Blandonnet 8 • CP 401  
CH-1214 Vernier, Geneva, Switzerland  
Tel. +41 22 749 01 11  
Fax +41 22 749 09 47  
copyright@iso.org  
www.iso.org

# Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Test parameters and conditions</b> .....	<b>3</b>
4.1 Set up.....	3
4.2 Sample size.....	4
4.3 Print mode.....	4
4.4 Print environment.....	5
4.5 Paper.....	5
4.6 Maintenance.....	5
4.7 Test files.....	6
<b>5 Test methodology</b> .....	<b>6</b>
5.1 Testing procedure.....	6
5.1.1 Preparation.....	6
5.1.2 Installation of test cartridges.....	6
5.1.3 Testing.....	7
5.1.4 End of cartridge life procedure.....	7
5.2 Procedure for handling streaks.....	7
5.2.1 Nozzle cleaning.....	7
5.3 Procedure for handling a defective cartridge, printhead or printer failure.....	8
5.3.1 General.....	8
5.3.2 Defective cartridge.....	8
5.3.3 Defective printhead.....	9
5.3.4 Defective printer.....	9
<b>6 Determination of the declared yield value and declaration</b> .....	<b>9</b>
6.1 Yield of primary cartridges.....	9
6.2 Yield of supplemental cartridges.....	10
6.3 Test data reporting.....	11
6.4 Declaration of the yield.....	12
<b>Annex A (informative) Examples of fade</b> .....	<b>17</b>
<b>Annex B (informative) Examples of streaks</b> .....	<b>18</b>
<b>Annex C (normative) Test reporting form</b> .....	<b>19</b>
<b>Annex D (informative) Process flowchart</b> .....	<b>23</b>
<b>Annex E (informative) Method for comparison of inkjet performance to ISO/IEC 19752</b> .....	<b>26</b>
<b>Bibliography</b> .....	<b>28</b>

## 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. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

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

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: [Foreword — Supplementary information](#).

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, Subcommittee SC 28, *Office equipment*.

This third edition cancels and replaces the second edition (ISO/IEC 24711:2007), of which it constitutes a minor revision.

## Introduction

The purpose of this International Standard is to provide a process for determining the ink cartridge yield for a given colour inkjet print system (i.e. integrated ink cartridges and ink cartridges without integrated printheads) using a standard consumer type test suite. In the case where a cartridge set can be used in multiple printer models, only one yield test needs to be performed as long as the difference between printer models does not impact yield.

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

This International Standard prescribes the following:

- the test method that manufacturers, test laboratories, etc. use to determine ink cartridge yield;
- the method for determination of declared yield values from the test results; and
- the appropriate method of describing the yield of cartridges in documentation supplied to the consumer by the manufacturer.

The cartridge yield is determined by an end-of-life judgement, or signalled with either of two phenomena: *fade*, caused by depletion of ink in the cartridge, or *automatic printing stop*, caused by an ink out detection function. It is envisioned that one of the uses of this International Standard will be for the calculation of cost per page (CPP). While this International Standard measures a portion of this cost, it is not used as the sole component of CPP calculation. Additional factors are considered for CPP calculations.

# Method for the determination of ink cartridge yield for colour inkjet printers and multi-function devices that contain printer components

## 1 Scope

The scope of this International Standard is limited to evaluation of ink cartridge page yield for ink-containing cartridges (i.e. integrated ink cartridges and ink cartridges without integrated printheads) for colour inkjet print systems. This International Standard 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 inkjet printer components. Both liquid and solid ink products can be tested using this International Standard.

This International Standard is only intended for the measurement of ink cartridge page yield when printing on plain paper. No other claims can be made from this testing regarding quality, reliability, etc.

This International Standard can be used to measure the yield of any cartridge that is used in a significant amount during the printing of the test suite defined in ISO/IEC 24712.

This International Standard is not for use with printers whose minimum printable size is equal to or greater than A3 or for printers designed or configured to print photos (for example, maximum printable size less than A4 or a printer configuration intended for photo-only printing). In addition, it only applies to drop-on-demand printing systems.

## 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 24712, *Colour test pages for measurement of office equipment consumable yield*

ISO/IEC 29102, *Information technology — Office equipment — Method for the determination of ink cartridge photo yield for colour printing with inkjet printers and multi-function devices that contain inkjet printer components*