
Information technology — Office equipment — Method for measuring copying machine productivity

*Technologies de l'information — Équipement de bureau — Méthode de
mesure de la productivité des machines à copier*



Contents

1 Scope	1
2 Normative references	1
3 Test conditions	2
4 Measuring method	2
5 Calculations and Treatment of Data	4
6 Presentation of results	5

© ISO/IEC 1998

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

ISO/IEC Copyright Office • Case postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

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. Draft International Standards adopted by the joint technical committee are circulated to national bodies for voting. Publication as an International Standard requires approval by at least 75 % of the national bodies casting a vote.

International Standard ISO/IEC 14545 was prepared by ISO/IEC JTC 1, *Information technology*, Subcommittee SC 28, *Office equipment*.

Annex A of this International Standard is for information only.

Information technology — Office equipment — Method for measuring copying machine productivity

1 Scope

This International Standard specifies a method for measuring the real output speed or “productivity” of copying machines. This International Standard is applicable to plain paper copying machines equipped with automatic document feeder or handling capability. This International Standard can be used for such machines run in either simplex or duplex copying modes. It is specifically intended for use with non-digital copiers, generally referred to as light-lens or analog devices. This International Standard allows comparison of the throughput copy rates for a machine operated in its various available duplexing modes.

Most copying machines produce duplex copies at a different rate than their nominal speed¹ when automatically feeding originals, and sorting and/or finishing the copies.

Duplex copy modes (1:2,2:1,2:2) are often used. In those modes, a reduction of effective copying speed is frequently clearly noticed.

The degree to which a reduction in productivity is experienced depends significantly on the type of document handler used on a machine. A document handler which presents originals to a copier platen in collated order for a single copy of each page to be made in succession (precollating) can provide a very different productivity from one which presents originals for copying of the full number of desired pages before the next original page in sequence is advanced to the platen for copying (postcollating). In addition, the effective productivity of a machine can be influenced by job related parameters, the most dominant of which are the number of originals in a set to be copied, and the run length, or number of copied sets to be produced. Existing standards, as well as common contemporary practices for measuring and reporting copying machine productivity do not adequately take into account these important machine and job related factors.

This International Standard provides a common method for measuring the real output speed or “productivity” when the above mentioned duplexing modes are used, and it allows manufacturers and buyers of copying machines to describe and compare the “productivity” of various copying machines equipped with such features.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO/IEC 11159:1996, *Information technology — Office equipment — Minimum information to be included in specification sheets — Copying machines*.

American Society for Testing and Materials — ASTM F 1318-90 — “Standard Test Method for Determination of Productivity Using Electrostatic Copy Machines with Various Configurations”.

¹ Nominal copying speed as used herein refers to copies per minute produced in a continuous copying mode with an original stationary on the machine platen. Measurement of nominal copying shall be according to ISO/IEC 11159-2, parameter 5.1 Copying speed.

3 Test conditions

3.1 Environment

The test(s) shall be performed in the following environment:

- Temperature: 18°C to 25°C
- Relative humidity: 30% to 70%

The copying machine shall be fully enclosed in its normal operation cover set. The machine and its full complement of supplies shall have been acclimated in this environment prior to conduct of the test(s). All supplies used in the test(s), including copy paper, shall be those specified by the manufacturer.

3.2 Voltage

The copying machine shall be connected to a voltage supply which remains within $\pm 10\%$ of the nominal value of the specified operating voltage for the copying machine under test.

3.3 Copy paper

The paper used shall have the following characteristics:

- cutsheet
- A4 size
- weight: 60 g/m² to 90 g/m²

4 Measuring method

4.1 Definitions

“Simplex copying”: This term is generic, and while less often used, it is the logical counterpart to the common term “duplexing” (see below). It describes the single most common specific operating mode:

1:1 mode: Simplex to simplex, or single-sided originals to single-sided copies.

“Duplexing”: This term is used to describe uses in which a copier can make a number of copies for a given number of originals, with information on one or both sides of the originals, and the copying being done to one or both sides of the copies. There is a one to one correspondence between originals and copies with regard to page content, but the three specific operating modes are each associated with more or less sheets of copied paper than original sheets of paper as follows:

1:2 mode: Simplex to duplex, or single-sided originals to two-sided copies

2:2 mode: Duplex to duplex, or two-sided originals to two-sided copies

2:1 mode: Duplex to simplex, or two-sided originals to single-sided copies

4.2 Measurements

4.2.1 General

The machine under test shall be preconditioned as in clause 3. The orientation of copy paper shall correspond to long edge feed, except in the instance when this feed orientation is not an attribute of the machine. In this latter case, short edge feed must be used, and this fact must be reported with the results of these tests.

The test(s) shall be done in the following modes, insofar as they are available on the machine of interest: 1:1, 1:2, 2:2, 2:1. Each test generates multiple sets of copies, as set forth in the following matrix table (Table 1, Productivity Run Matrix) of defined test conditions. The test requirements differ depending on the nominal speed of the copying machine. Examples of these test requirements and results are shown in Annex A.