

SS 596:2014(2023)+A1(2023)
(ICS 37.080)

SINGAPORE STANDARD

**Code of practice for imaging and writing of
digital text and drawing documents on 16 mm
and 35 mm black and white, silvergelatin type
microfilm for long term preservation –
Operating procedures**

Incorporating Amendment No. 1

Confirmed and classified as a mature standard 2023

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Foreword

This Singapore Standard was prepared by the Technical Committee for Microfilming under the direction of the Chemical Standards Committee.

Records document an organisation's business activities (policies and transactions), accountability and corporate governance and they are an integral part of corporate memory, serve longer term information needs and support business continuity. Effective management of records throughout their information lifecycle to ensure that records are available at the right time and to the right people thus becomes a critical aspect of all business operation. At the same time, modern records that are increasingly born digital and reside in the e-recordkeeping system pose challenges to the future availability and accessibility of records. Furthermore, the ease of digital information being mutated intentionally or unintentionally due to technological advancement in record creation and keeping systems could affect the authenticity and trustworthiness of the information value in the records.

A reliable and trustworthy recordkeeping system ought to be independent of the records creation and maintenance (active and semi active usage) processes. The use of archival quality microfilm to capture essential/vital business records to protect the recorded content (captured as images on film) being altered, as well as enabling long term access to the recorded (and eye-readable) information, has long been a common practice since the 1980s. Many ISO and national standards were developed to guide production of high-quality microfilms which many archives and libraries have adopted as microfilm is generally accepted as an "archival medium". Although four Singapore Standards relating to the production of 16 mm and 35 mm formats microfilm for office documents, technical/engineering drawing documents and newspapers, and the quality control requirements of microfilm product have already been developed, there was still a need to develop a new standard to guide users on writing digital records on 16 mm and 35 mm archival quality microfilm as opposed to the older, if not almost obsolete method of producing COM (Computer-Output Microfilm). This is due to the change in microfilming technology, from analogue to digital capturing. To avoid confusion in the naming of old and new microfilm writing technology, they are differentiated by the term 'digital-type archive writer' (DAW). The microfilm produced through the DAW process is archival as compared to microfilm produced by COM processes.

In preparing this standard, reference was made to the following publications:

SS 520 : 2013	Code of practice for microfilming of documents on 16 mm black and white, silver-gelatin type microfilm planetary and rotary camera filming – Operating procedures
SS 521 : 2006 (2013)	Code of practice for microfilming of technical drawings and other drawing office documents on 35 mm black and white, silver-gelatin type microfilm/planetary camera filming – Operating procedures
SS 523 : 2006 (2013)	Code of practice for microfilming of newspapers on 35 mm black and white, silver-gelatin type microfilm/planetary camera filming – Operating procedures
ISO 6199 : 2005	Micrographics – Microfilming of documents on 16 mm and 35 mm silver-gelatin type microfilm – Operating procedures
ISO/TR 10255 : 2009	Document management applications – Optical disk storage technology, management and standards
ISO/TR 12033 : 2009	Document management – Electronic imaging – Guidance for the selection of document image compression methods

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ISO 13008 : 2012	Information and documentation – Digital records conversion and migration process
ISO 16175-1 : 2010	Information and documentation – Principles and functional requirements for records in electronic office environments – Part 1 : Overview and statement of principles
ISO 18911 : 2010	Imaging materials – Processed safety photographic films – Storage practices
ISO 19005-1 : 2005	Document management – Electronic document file format for long-term preservation – Part 1 : Use of PDF 1.4 (PDF/A-1)
ISO 24517-1 : 2008	Document management – Engineering document format using PDF – Part 1 : Use of PDF 1.6 (PDF/E-1)
ISO 30300 : 2011	Information and documentation – Management systems for records – Fundamentals and vocabulary
IEEE Std 167A.1-1995	IEEE standard facsimile test chart: Bi-level (black & white)
UTT Technical Specification version 1.1	(http://www.universaltesttarget.com/download/UTT%20technical%20specs%20v1.1.pdf)

Acknowledgement is made for the use of information from the above publications and for the reproduction of the following materials into SS 596:

- Clause 1 from ISO 18911 : 2010
- 3.2 and 3.10 from ISO/TR 13028 : 2010
- 3.11 from ISO/TR 12033 : 2009
- 3.12 from ISO 13008 : 2012
- 4.1 from ISO 30300 : 2011
- 6.5.7 and Figure 16 from ISO 6199 : 2005
- Figure 5 from IEEE Std 167A.1-1995

Copyright remains with ISO and IEEE respectively.

*As amended
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Acknowledgement is also made to the following organisations for their contributions:

- National Library Board for reviewing this standard which resulted in confirming the standard with amendment and classifying it as a mature standard.
- Micrographics Data Pte Ltd for assisting in this review.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all such patent rights.

NOTE

1. *Singapore Standards (SSs) and Technical References (TRs) are reviewed periodically to keep abreast of technical changes, technological developments and industry practices. The changes are documented through the issue of either amendments or revisions. Where SSs are deemed to be stable, i.e. no foreseeable changes in them, they will be classified as “mature standards”. Mature standards will not be subject to further review unless there are requests to review such standards.*
2. *An SS or TR is voluntary in nature except when it is made mandatory by a regulatory authority. It can also be cited in contracts making its application a business necessity. Users are advised to assess and determine whether the SS or TR is suitable for their intended use or purpose. If required, they should refer to the relevant professionals or experts for advice on the use of the document. Enterprise Singapore and the Singapore Standards Council shall not be liable for any damages whether directly or indirectly suffered by anyone or any organisation as a result of the use of any SS or TR. Although care has been taken to draft this standard, users are also advised to ensure that they apply the information after due diligence.*
3. *Compliance with a SS or TR does not exempt users from any legal obligations.*

Code of practice for imaging and writing of digital text and drawing documents on 16 mm and 35 mm black and white, silver-gelatin type microfilm for long term preservation – Operating procedures

1 Scope

This Singapore Standard specifies the operating procedures for imaging and writing of digital text and drawing documents on 16 mm and 35 mm black and white, silver-gelatin type microfilm for long term preservation.

In this Singapore Standard, long term is considered to be a period of time usually lasting more than a century. In ISO 18911, the life expectancy (LE) is the length of time that information is predicted to be acceptable in a system at 21oC and 50% RH. The number following the LE symbol is a prediction of the minimum life expectancy, in years, during which information can be retrieved without significant loss when stored at 21oC and 50% RH, e.g. LE-100 indicates that information can be retrieved after at least 100 years' storage. Broadly speaking, extended-term storage conditions can extend the useful life of a majority of freshly processed films to 500 years.

Black-and-white, silver-gelatin type microfilm when properly processed and stored will become an irreversible record of proven quality, meeting extended-term storage criterion.

This Singapore Standard does not cover the following:

- Animated images or sounds;
- Three-dimensional images; and
- Electronic medical records such as X-ray images.

2 Normative references

The following referenced documents are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

SS 522	Code of practice for quality control inspection of 16 mm and 35 mm black and white, silver-gelatin type microfilm
ISO 3334	Micrographics — ISO resolution test chart No. 2 — Description and use
ISO 10196	Document imaging applications – Recommendations for the creation of original documents
ISO 11506	Document management applications – Archiving of electronic data – Computer output microform (COM)/Computer output laser disc (COLD)
ISO 12653-1	Electronic imaging – Test target for the black-and-white scanning of office documents – Part 1: Characteristics

ISO 12653-2	Electronic imaging – Test target for the black-and-white scanning of office documents – Part 2: Methods of use
ISO/TR 13028	Information and documentation – Implementation guidelines for digitization of records
ISO 29861	Documentation management applications – Quality control for scanning office documents in colour