
**Imaging materials — Processed
imaging materials — Albums, framing
and storage materials**

*Matériaux pour image — Matériaux pour image après traitement —
Albums, cadrage et matériaux d'archivage*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. 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 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. 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.

The committee responsible for this document is ISO/TC 42, *Photography*.

This third edition cancels and replaces the second edition (ISO 18902:2007), which has been technically revised.

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Introduction

This International Standard contains specifications to ensure that products used for the storage and display of imaging materials, such as envelopes, boxes, albums and frames, will not damage the enclosed imaging materials or accelerate their natural decay rates.

Specifying the chemical and physical characteristics of the storage and display materials does not, by itself, ensure satisfactory storage or display behaviour. It is also essential to provide proper storage temperature, humidity and light levels (if on display), as well as protection from the hazards of fire, water, and fungal growth, from contact with certain chemicals in solid, liquid or gaseous form (e.g. atmospheric pollutants), and from physical damage.

Recommended storage conditions are given in the following International Standards for the different types of imaging materials: ISO 18911, ISO 18918, ISO 18920, and ISO 18934.

This International Standard does not apply to supplementary materials that may be stored with imaging materials such as documents and ephemera (for permanence requirements for paper for documents, see ISO 9706).

Note that the term “archival” is not used in International Standards for imaging materials or for storage and display materials, because the meaning of “archival” has become too ambiguous. Therefore, storage and display materials should not be referred to as “archival,” but rather as meeting the specifications of this International Standard.

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Imaging materials — Processed imaging materials — Albums, framing and storage materials

1 Scope

This International Standard specifies the principal physical and chemical requirements for album, storage and framing materials to prevent damage to processed or printed imaging materials over time. This International Standard covers requirements for paper and paperboard, plastics, metals, writing instruments, adhesives, tapes, self-adhesive labelling materials, stamping inks and pads as well as framing and glazing materials used as or in the construction of storage and display materials for black-and-white or colour reflection prints or negatives made with traditional silver-halide and silver dye bleach photographic materials, as well as dye- and pigment-based inkjet; dye diffusion thermal transfer (“dye sublimation”), and liquid- and dry-toner electrophotographic digital prints.

This International Standard does not provide specifications for the design, construction or durability of the storage and display materials themselves. The requirements are limited to the characteristics of the storage or display materials that may affect the imaging materials either chemically or physically when they are stored or displayed under recommended conditions.

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 302, *Pulps — Determination of Kappa number*
<https://standards.iteh.ai/catalog/standards/sist/3c2232f9-d14c-462e-a6e9-7683aadaa2a1/iso-18902-2013>

ISO 10716, *Paper and board — Determination of alkali reserve*

ISO 12757-1:1998, *Ball point pens and refills — Part 1: General use*

ISO 12757-2:1998, *Ball point pens and refills — Part 2: Documentary use (DOC)*

ISO 14145-1:1998, *Roller ball pens and refills — Part 1: General use*

ISO 14145-2:1998, *Roller ball pens and refills — Part 2: Documentary use (DOC)*

ISO 18916, *Imaging materials — Processed imaging materials — Photographic activity test for enclosure materials*

ISO 18932, *Imaging materials — Adhesive mounting systems — Specifications*

TAPPI T509, *Hydrogen ion concentration (pH) of paper extracts (cold extraction method)*

ASTM D1193, *Standard Specification for Reagent Grade Water*

3 Terms and definitions

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

3.1

acid-free adhesive

adhesive with a cold extraction pH equal to or greater than the reference water minus 0,5 and less than 10,0

3.2

acid-free paper or paperboard

paper or paperboard with a cold extraction pH equal to or greater than reference water minus 0,5 and less than 10,0

3.3

anti-blocking agent

additive or component which prevents sticking or fusing of adjacent resins or plastic films, either through microscopic bumps on the surface or by otherwise reducing the likelihood that two materials will stick together

Note 1 to entry: Examples are talc, other silicates, and amides.

3.4

buffered

paper or paperboard with an alkali reserve that is equivalent to at least 2,0 % by weight calcium carbonate (CaCO_3)

3.5

lignin-free

paper or paperboard with a Kappa number of 7,0 or less, corresponding to a lignin concentration of approximately 1,0 % or less by mass

3.6

photo-safe

material that meets all requirements within this International Standard so that it will not accelerate the natural aging of photographic prints or films or digitally printed images

Note 1 to entry: Material that only meets pH requirements or passes the photographic activity test described in ISO 18916 is not necessarily photo-safe due to other factors that may be harmful. Only materials that meet all requirements of this International Standard can be considered photo-safe.

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3.7

slip agent

component added to plastic material to reduce the coefficient of friction

4 Materials

4.1 Paper and board

Paper or paperboard shall be acid-free as determined by a cold extraction pH measurement equal to or greater than the reference water minus 0,5 and less than 10,0 using the method given in TAPPI T509, with the following modifications.

- ASTM D1193 Type I or Type II water shall be used for this measurement and shall have a pH between 6,0 and 8,0. If the pH does not meet these requirements, the water shall be boiled for 1 h so that it meets these requirements.
- The temperature of the water shall be $(25 \pm 5)^\circ\text{C}$ and the circuit of the pH meter shall include temperature compensation.
- Reagent water may be added as a single 75 ml addition to limit the exposure of the extract solution to acids in the atmosphere.
- The sample and the reference water shall be gently agitated at least once during the 1 h soak.
- The probe shall be rinsed with a small quantity of extract or reference water before measuring the pH.

Paper and paperboard material shall include an alkali reserve of at least 2,0 % by weight calcium carbonate (CaCO_3), as determined by the alkali reserve test described in ISO 10716. The alkali reserve

should be evenly distributed throughout the paper or paperboard. There is no maximum limit for alkali reserve content.

A minimum of sizing chemicals should be used, the amount being dictated by the requirements of the end use (enclosures, overwraps, interleaving, etc.). If sizing is used, neutral or alkaline sizing chemicals (internal and/or surface) shall be employed.

Unprinted, pre-consumer recycled material may be used; however, post-consumer recycled material shall not.

Paper and paperboard material shall meet the requirements of the photographic activity test described in ISO 18916.

Paper and paperboard material shall have a Kappa number of 7,0 or less as determined by the method described by ISO 302.

Dyes or pigments used to colour the paper shall show no bleeding or transfer when soaked in distilled water for 24 h while held in direct contact with white bond paper.

Each colour of paper or paperboard shall be tested separately to meet all requirements in this International Standard.

Album, storage and framing materials made with paper or paperboard that are coated or laminated on both sides with a plastic film shall be subject to 4.2, Plastic, and not 4.1, Paper. Album, storage and framing materials that are coated or laminated on only one side with a plastic film shall be subject to both 4.1, Paper, and 4.2, Plastic.

For album bindings, requirements for the photographic activity test, lignin and sizing do not apply when the bindings will not come in direct contact with the imaging materials inside (either front or back), when the bindings are separated by a barrier material such as a plastic cover sheet over the pages, or when the interior lining of the binding is either a barrier or meets all of the requirements in 4.1.

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4.2 Plastic

Plastics shall meet the requirements of the photographic activity test described in ISO 18916.

Chlorinated, nitrated or acetate plastic sheeting, such as polyvinyl chloride, cellulose nitrate, and cellulose acetate, shall not be used as they have poor chemical stability.

Plasticized sheeting or coatings shall not be employed, as this might result in image transfer, sticking, or changes to the image surface. Plastics containing residual solvents or plasticizers are suspect, because these chemicals may escape and have a harmful effect on the imaging materials.

Fire-retardant plastics used for containers shall contain anti-oxidants and non-halogenated fire retardants, such as antimony oxide.

Album, storage and framing materials made with paper or paperboard that are coated or laminated on both sides with a plastic film shall be subject to 4.2, Plastic, and not 4.1, Paper. Album, storage and framing materials that are coated or laminated on only one side with a plastic film shall be subject to both 4.1, Paper, and 4.2, Plastic.

Historically, pigment inkjet prints on all paper types and dye inkjet prints on matte-surface papers have been sensitive to scuffing and smudging, but resistance to abrasion has been improved for more recent products. These prints should be sleeved in smooth plastic enclosures; however, some plastics, such as polyester, may develop a static charge that can attract dust which may also damage the surface of prints. All valuable prints should be housed in such a way that no material comes in direct contact with the surface of the print.

NOTE Examples of suitable plastic enclosure materials are polyester [poly(ethylene terephthalate)], polystyrene, polyethylene, polypropylene, and spun-bonded polyolefins as they are usually inert, unplasticized, and have good chemical stability. Other plastics may be satisfactory, but there has been no extended experience with such materials.